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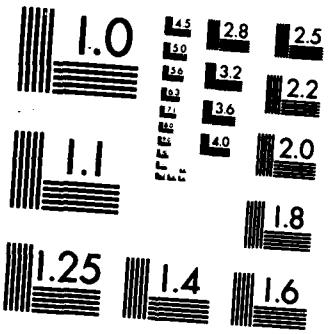

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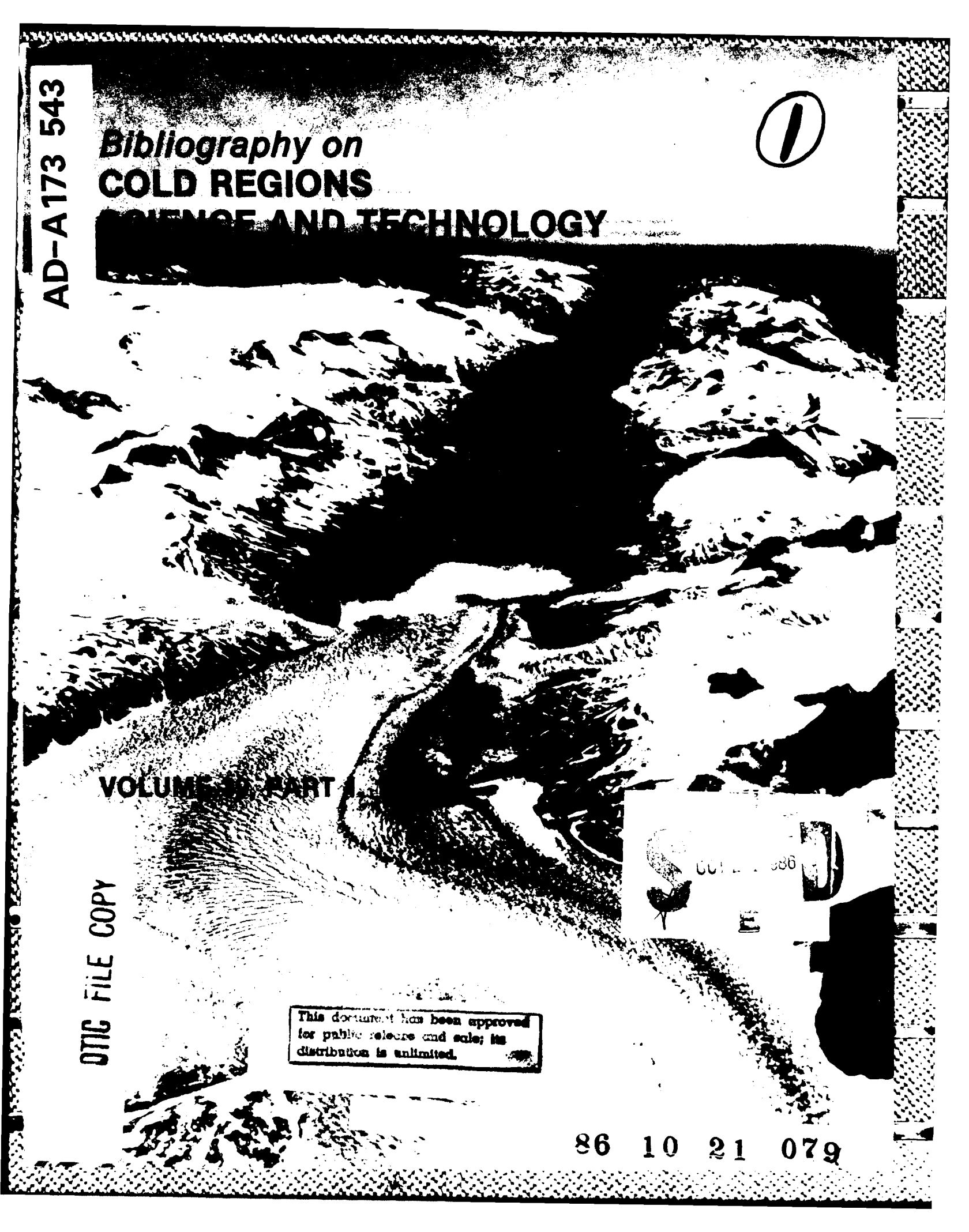

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Bibliography on
COLD REGIONS SCIENCE AND TECHNOLOGY

VOLUME 39, PART 1, 1985

Geza T. Thuronyi, Editor

BIBLIOGRAPHY ON COLD REGIONS SCIENCE AND TECHNOLOGY
Volume 39, 1985

INTRODUCTION

The *Bibliography on Cold Regions Science and Technology* was first published in 1951 and is a continuing publication of the Cold Regions Bibliography Project in the Science and Technology Division of the Library of Congress. It is sponsored by and prepared for the Cold Regions Research and Engineering Laboratory (formerly Snow, Ice and Permafrost Research Establishment) of the U.S. Army Corps of Engineers. Volumes 1-15 were issued as the *Bibliography on Snow, Ice and Permafrost*, SIPRE Report 12. Beginning with volume 16 the designation was changed to CRREL Report 12. With volume 20 the title was changed to *Bibliography on Snow, Ice and Frozen Ground, with Abstracts*, and with volume 23 the current title was adopted.

This ~~The present~~ volume contains material accessioned between October 1984 and September 1985. It contains the full citation of 4068 items, in many cases with abstracts. Indexing for the volume is issued as Volume 39, Part 2.

This publication is the result of a coordinated effort. The bibliographic work was done by the Cold Regions Bibliography Project Staff who entered all data on a single computerized data base that accommodates both the *Bibliography on Cold Regions Science and Technology* and the *Antarctic Bibliography*, thus eliminating duplication of effort between the two bibliographies. The data processing, based on MARC II input, was handled by the Library's Automated Systems Office and the photocomposition by the Cataloging Distribution Service.

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Geza T. Thuronyi, Head
Cold Regions Bibliography Project
Science and Technology Division
Library of Congress

39-1

Search for meteorites in the Allan Hills/Elephant Moraine area, 1982-1983.

Cassidy, W.A., et al, *Antarctic journal of the United States*, 1983, 18(5), p.81-82, 3 refs.

Meunier, T., Buchwald, V., Thompson, C.

Ice cover, Age determination, Geodetic surveys, Antarctica—Allan Hills.

Meteorites were discovered for the first time at the Allan Hills far western icefield and at sites northwest of Elephant Moraine. A meteorite (field number 2995) discovered at the far western icefield almost completely embedded in ice seemed to be a fresh specimen being exposed for the first time at the ablation surface. If this interpretation is correct, it will be possible to determine the age of the enclosing ice as well as the terrestrial age of the meteorite and thus provide a check on age determination methods currently being developed for ancient ice. The locations of six points to be used as base stations in mapping meteorite finds were precisely determined with the use of two Magnavox geoceivers. Geographic coordinates and elevations are given, and field data for one station are compared with post-processed data.

39-2

Exploration for meteorite concentrations in the Thiel Mountains/Pecora Escarpment region, 1982-1983.

Schutt, J., et al, *Antarctic journal of the United States*, 1983, 18(5), p.83-86, 3 refs.

Rancitelli, L.A., Krähenbühl, U., Crane, R.

Colored ice, Ice surface, Antarctica—Thiel Mountains.

This report details the results of exploration for meteorites around Thiel Mountains and Pecora Escarpment, and the icefields around Davies Escarpment and Moulton Escarpment in the vicinity of the Thiel Mountains. The areas visited are described. Fifty meteorite specimens were recovered from the Pecora, the Davies, and the Moulton Escarpments. Forty-four are tentatively identified as ordinary chondrites and six as achondrites. All locations of recovered meteorites were mapped. The Pecora Escarpment and the Moulton Escarpment probably contain significant meteorite concentrations. Concentrations along the Davies Escarpment are thought to be minor.

39-3

Ice sheet overriding of the Transantarctic Mountains.

Denton, G.H., et al, *Antarctic journal of the United States*, 1983, 18(5), p.93-95, 13 refs.

Kellogg, D.E., Kellogg, T.B., Prentice, M.L.

Glacial erosion, Ice sheets, Glacial geology, Antarctica—Transantarctic Mountains.

Evidence for late Tertiary overridings of the Transantarctic Mountains by an expanded antarctic ice sheet considerably larger than those of late Quaternary ice ages is presented. Imprints of glacial erosion record angular overriding of the preexisting mountain-and-valley topography by northeastward-flowing ice. The overriding ice sheet modified preexisting alpine topography in the Asgard and Olympus Ranges, Quartermain Mountains, and Kukri Hills producing an array of subglacial deposits and erosional features and depositing basal sediments on the eroded landscape. It is believed that the overriding was multiple and that one episode occurred more than 9 to 15 m.y.a. A minimum age between 2 and 3.38 m.y. has been suggested for the overriding.

39-4

Glacial geology and soils in Beacon Valley.

Potter, N., Jr., et al, *Antarctic journal of the United States*, 1983, 18(5), p.100-103, 6 refs.

Wilson, S.

Glacial geology, Glacier oscillation, Soil science, Rocks, Antarctica—Beacon Valley.

The glacial history and soils of Beacon Valley have been studied as part of a project to investigate the glacial history of the McMurdo Sound region. The major objectives were: (1) to map glacial features and determine the chronology of glacial events using soils as relative age indicators, (2) to study fluctuations of Taylor Glacier where it has entered lower Beacon Valley, and (3) to study the behavior of alpine glaciers and ice-cored rock glaciers that originate in tributary lateral valleys (LV) and mantle the main valley floor. Eighteen soil pits were excavated, described, and sampled and 57 samples were collected for soil chemical analysis. In addition, 57 samples were collected from shallower excavations for particle size and mineralogical analysis. Surface boulder weathering counts were performed on a minimum of 100 boulders larger than 25 centimeters near each soil pit and on rock glacier lobes.

39-5

Analysis of geophysical data from Dome C and the Ross Ice Shelf.

Bentley, C.R., et al, *Antarctic journal of the United States*, 1983, 18(5), p.104-105, 10 refs.

Shabtaie, S., Lingle, C.S., Blankenship, D.D.

Seismic prospecting, Ice sheets, Ice shelves, Ice models, Antarctica—Ross Ice Shelf.

Geophysical data from Dome C and the Ross Ice Shelf are summarized under the following headings: electrical resistivity studies: soundings and computer modeling, seismic studies, subglacial geology at Dome C; and retreat of ice streams in the Ross Sea embayment. It has been demonstrated that electrical resistivity soundings can be used to estimate the depth at which the Recent-Wisconsin boundary exists. Further, it may be possible, using resistivity soundings, to trace the climatic boundary in an ice sheet by making measurements at stations along a flow line. Studies of the subglacial lithology at Dome C imply that the rock is most likely andesite or basalt and that this portion of the continent was located at a high magnetic latitude when the rock was emplaced. Work has continued on the development of a numerical model of a polar ice stream that is grounded below sea level.

39-6

Liquid conductivity of a 44-meter firn core, McMurdo Ice Shelf.

Palais, J.M., et al, *Antarctic journal of the United States*, 1983, 18(5), p.106-107, 5 refs.

Delmas, R., Briat, M., Jouzel, J.

Firn, Ice shelves, Impurities, Ice composition, Antarctica—McMurdo Ice Shelf.

To investigate the potential for obtaining a volcanic record from Mount Erebus in the area of Windless Bight, a study was made of a firn core drilled on the McMurdo Ice Shelf. Although a volcanic record was not obtained from the core, a record of impurity concentration variations at the site for the last 100 years was obtained. Continuous profiles of liquid conductivity and deuterium down to 44 m were obtained for the core. A few samples were also measured for sulfate, nitrate, and sodium. It is concluded from the results that in coastal sites such as the McMurdo Ice Shelf location, conductivity variations can be interpreted as seasonal variations of marine salts and can be used to date cores and to estimate accumulation rates. The origin of substantial excess sulfate at this site is as yet unclear.

39-7

Ross Ice Shelf oxygen isotope profile at J-9.

Grootes, P.M., et al, *Antarctic journal of the United States*, 1983, 18(5), p.107-109, 14 refs.

Stuiver, M.

Ice shelves, Ice composition, Ice cores, Antarctica—Ross Ice Shelf.

The Ross Ice Shelf oxygen isotope profile at J-9 shows three (and possibly four) regions of differing *delta* O-18 trends. From 35 to 274 m depth increasingly negative *delta* O-18 values (-28.5 per mille to -36 per mille) reflect an origin of the ice as precipitation that fell during the Holocene on the Ross Ice Shelf, Ice Stream B and finally in the catchment area of Ice Stream B. A sharp drop in *delta* O-18 to -43 per mille from 274 to 281 m depth indicates the transition from Holocene to Last Glacial. Below this *delta* O-18 is essentially independent of depth at about -42 per mille.

39-8

Detailed studies of tephra layers in the Byrd Station ice core: Preliminary results and interpretation.

Palais, J.M., et al, *Antarctic journal of the United States*, 1983, 18(5), p.109-110, 7 refs.

Kyle, P.R., Delmas, R.

Ice composition, Ice sheets, Impurities.

This paper reports on some new analyses of the ice chemistry of the Byrd Station ice core, and on the composition and morphology of particles of some of the dust layers. New data on several of the ash layers are also presented. Acidity, conductivity, sulfate, nitrate, sodium, and aluminum were measured and their correlations with acidity and dust layers in the core are discussed. The results indicate an important background component of excess sulfate at Byrd Station as well as a sporadic volcanic contribution associated with the dust layers. Preliminary studies of the samples show distinct differences in size, morphology, and surface chemistry of the particles from ash and dust layers. It is suggested that the ash layers were formed during normal subaerial eruptive activity while the dust layers were formed in subglacial volcanic eruptions. The study of dust and ash layers in ice cores may provide information on thickness changes and thus the stability of the west antarctic ice sheet.

39-9

Radioactive dating of Byrd core and Allan Hills ice.

Fireman, E.L., *Antarctic journal of the United States*, 1983, 18(5), p.111, 6 refs.

Ice dating, Ice cores, Ice composition, Antarctica—Allan Hills.

Two radioactive dating methods have been applied to the Byrd core and Allan Hills ice: C-14 and uranium series dating. The oldest C-14 date for a Byrd core sample was 8,900 years. In the Allan Hills, the oldest C-14 age, 10,500 years was for subsurface ice from the cul de sac region. Subsurface ice from other Allan Hills regions gave ages about 6,000 years. The procedure for uranium series dating is described. An uncorrected radium-226/thorium-230 recoil age of 40,000 years was obtained for a near bottom Byrd sample; however this age must be corrected for the dissolved components and the disequilibrium in the dust. The correction factors are being determined.

39-10

Ice mass fluctuations in northern Victoria Land.

Mayewski, P.A., *Antarctic journal of the United States*, 1983, 18(5), p.112, 3 refs.

Glacier mass balance, Glacial geology, Glacier ablation, Radio echo soundings, Antarctica—Victoria Land.

The primary controls on the activity of Rennick Glacier and others in this region are mass balance and sea-level. Results of the field study to date indicate that the upper Rennick Glacier and others in this region are mass balance and sea-level. Results of the field study to date indicate that the upper Rennick Glacier region is characterized by glacio-depositional and erosional features associated with wet-based ice, surface water flow, ablation rates more intense than in more southerly areas of the Transantarctic Mountains, and marked thinning of ice in its catchment area. The thinning may lead to a dramatic decrease in the volume of ice entering Rennick Glacier and further inland migration of its grounding line.

39-11

237-meter ice core from South Pole station.

Kuivinen, K.C., *Antarctic journal of the United States*, 1983, 18(5), p.113-114, 5 refs.

Ice coring drills, Ice cores, Drilling, Antarctica—Amundsen-Scott Station.

The Polar Ice Coring Office (PICO) used its new intermediate-depth drill system to collect a 237 m ice core at Amundsen-Scott Station during Nov.-Dec. 1982. The core will be analyzed for microparticle concentrations, oxygen isotopes, carbon dioxide, beryllium-10, chlorine-36, and acidity by Ohio State University, the University of Washington, and the University of Bern, Switzerland. The core was split, sampled and packaged for retrograde shipping to the various investigators' laboratories in a subsurface science trench excavated adjacent to the drill platform. The drill, designed for continuous coring in firn and ice to a maximum depth of 600 m, and its operation are described. Drilling was stopped at 237 m due to problems with the head and bit configuration. The designs will be revised to include self-stabilizing bits. Tests were conducted at South Pole Station on a solar-powered coring auger. The performance exceeded results from Greenland in July 1982.

39-12

Core processing and analyses of ice cores drilled at the South Pole.

Stauffer, B., et al, *Antarctic journal of the United States*, 1983, 18(5), p.114-116, 2 refs.

Schwander, J.

Ice cores, Drill core analysis, Ice composition, Atmospheric composition, Antarctica—Amundsen-Scott Station.

The main scientific goals of this project are to reconstruct the histories of atmospheric CO2 and solar activity, and measure the acidity of ice cores, which gives information on past volcanic activity. During the season, ice cores of a total length of 103 m drilled in 1980-81 and 120 m (from a depth of 106 to 227 m below surface) drilled in 1982-83 were processed. To set up a processing line, a trench 3 m deep, 3.5 m wide, and 14 m long was excavated next to the drilling site. The core processing procedure is shown schematically. Acidity, measured by electrodes, was higher at the beginning of a long-lasting snow, in summer, and after volcanic eruptions. The signal of seasonal variations seems to be small at the South Pole, but signals from large volcanic eruptions are clearly visible. A value of about 265 parts per million is estimated for the preindustrial atmospheric CO2 concentration.

39-13

South Pole pit stratigraphic studies.

Mosley-Thompson, E., et al, *Antarctic journal of the United States*, 1983, 18(5), p.116-118, 5 refs.

Firn stratification, Ice composition, Drill core analysis, Antarctica—Amundsen-Scott Station.

Kruss, P.D. During Nov. and Dec. 1982 four pits were excavated, by hand, at Amundsen-Scott Station. Bain, T. Pit walls were mapped and a clean vertical face was exposed for sample collection. A table summarizes the samples collected and measurements in each pit. In conjunction with each pit, a shallow core was extracted using the PICO lightweight hand auger. The cores and the samples from the pit walls will be measured for the following parameters: concentration and size distribution of microparticles, beta radioactivity, and delta oxygen-18 analyses. When the analyses are completed the data will allow assessment of the seasonal deposition and preservation of these parameters within the firn, their spatial and temporal variability over the last 12 years. Information from Pit 4 compared with 4 years of accumulation measurements indicates the formation of a sequence of three mass loss or depth hoar layers between the fall of 1980 and the fall of 1981. These sequences have been interpreted as indicators of missing years.

39-14

South Pole ice core processing and microparticle analysis.

Mosley-Thompson, E., et al, *Antarctic journal of the United States*, 1983, 18(5), p.118-119, 8 refs.

Thompson, L.G.

Ice cores, Drill core analysis, Particles, Antarctica—Amundsen-Scott Station.

Ice cores from Antarctica and Greenland have provided a broad spectrum of information about the global climate system particularly the characteristics of the atmosphere during the past. In order to further investigate the relationships between particle concentrations in ice cores and past events, i.e., global temperatures, radiation balance, volcanic events, etc. another South Pole ice core was extracted. The core is being examined at Amundsen-Scott Station by scientists from Ohio State University, the University of washington, and the University of Bern, in conjunction with personnel of the Polar Ice Coring Office. A science trench (3 m deep, 3.5 m wide, 14 m long) was excavated beside the drilling platform and equipment for ice core processing and analyses was installed in the trench. Studies being conducted on the core are outlined.

39-15

Satellite glaciology project.

Williams, R.S., Jr., et al, *Antarctic journal of the United States*, 1983, 18(5), p.119-121, 12 refs.

Ferrigno, J.G., Meunier, T.K.

Spacecraft, Ice shelves, Glaciology, Colored ice, Spaceborne photography.

This article contains descriptions of five research projects and a discussion of other antarctic-related activities by the staff of

the Satellite Glaciology Project. The research efforts include: 1) Satellite Image Atlas of Glaciers, 2) Index to and Table of Optimum Landsat Images of Antarctica, 3) Blue-ice Meteorites, and Satellite Imagery in Antarctica, 4) Satellite Radar Altimetry of the Amery Ice Shelf, East Antarctica, and 5) Coastal Maps of Antarctica.

39-16

Surface roughness of Ross Sea pack ice.

Govoni, J.W., et al, *Antarctic journal of the United States*, 1983, 18(5), MP 1764, p.123-124, 5 refs.

Ackley, S.F., Holt, E.T.

Sea ice, Pack ice, Ice surface, Measuring instruments, Antarctica—Ross Sea.

At the end of the 1980 austral winter, sea-ice surface roughness was assessed along selected tracks in the Ross Sea. The ice surveyed consisted mainly of first-year pack ice. Surface profiles were made using a Spectra-Physics Geodolite 3A laser profilometer which was mounted vertically in the camera bay of a National Science Foundation LC-130 aircraft. The profilometer, recording equipment and measurement technique are described. For the data analyzed to date, the Ross Sea region appears in general to have much less ridging than either the Weddell Sea or the Arctic Basin. The open nature of the boundaries here leads to generally divergent conditions and diminishes the stress transmitted through the pack ice resulting in fewer high ridges. Near coastal boundaries, however, localized high stress may exist and ridging features develop accordingly.

39-17

Numerical response of the middle atmosphere to the 11-year solar cycle.

Garcia, R.R., et al, *Planetary and space science*, April 1984, 32(4), p.411-423, Refs. p.422-423.

Solomon, S., Roble, R.G., Rusch, D.

Snow composition, Solar radiation, Solar activity, Antarctica.

A two-dimensional numerical model with coupled photochemistry and dynamics has been used to investigate the response of the middle atmosphere (16-116 km) to changes in solar activity over the 11-year solar cycle. Model inputs that vary with solar cycle include solar radiation, cosmic ray and auroral ionization rates and the flux of NOx at the model's upper boundary. In this study, the results of model runs for solar cycle minimum and maximum conditions are compared. Very large abundances of NOx are produced above 90 km by auroral particle precipitation. Considerable amounts of NOx are transported subsequently to the stratosphere by the global mean meridional circulation. It is shown that this excess NOx can lead to significant decreases in ozone concentrations at high latitudes and that it may explain observations of nitrate deposition in Antarctic snow. (Auth.)

39-18

Fish antifreeze protein and the freezing and recrystallization of ice.

Knight, C.A., et al, *Nature*, March 15-21, 1984, 308(5956), p.295-296, 17 refs.

DeVries, A.L., Oolman, L.D.

Ice crystal growth, Antifreezes, Recrystallization, Freezing points.

Antifreeze glycopeptides and peptides from the blood of polar fishes prevent the growth of ice crystals in water at temperatures down to about 1 C below freezing point, but do not appreciably influence the equilibrium freezing point. This freezing point hysteresis must be a disequilibrium effect, or it would violate Gibbs' phase rule, but the separate freezing and melting points are experimentally very definite: ice neither melts nor freezes perceptibly within the "hysteresis gap", for periods of hours or days. Unusual crystal faces on ice crystals grown from solutions of very low concentrations of the antifreeze glycopeptides and peptides are reported. This is a clue to the mechanism of freezing inhibition, and it may be the basis of a simple, very sensitive test for antifreeze material. Very low concentrations of the antifreeze protein are also remarkably effective in preventing the recrystallization of ice. (Auth.)

39-19

Late Tertiary history of the antarctic ice sheet: Evidence from the Dry Valleys.

Denton, G.H., et al, *Geology*, May 1984, 12(5), p.263-267, 16 refs.

Prentice, M.L., Kellogg, D.E., Kellogg, T.B.

Ice sheets, Ice override, Glacial erosion, Glacial geology, Paleoclimatology, Antarctica—Transantarctic Mountains.

Data from Dry Valleys suggest that outlet glaciers of a local ice cap carved primary valley systems on both flanks of the Transantarctic Mountains, while coeval alpine glaciers eroded exposed intervalley mountain ranges. Subsequently, a thick ice sheet overrode the Transantarctic Mountains at least twice, flowing northeastward across major pre-existing valleys. The youngest overriding episode postdated and the older episode antedated middle to early late Miocene time. It is proposed that an extensive ice sheet covered East and West Antarctica during overriding episodes. (Auth.)

39-20

Chemistry of precipitation in relation to precipitation type.

Warburton, J.A., *Science of the total environment*, April 1982, Vol 23, p.379-386, 9 refs.

Ice composition, Snow composition, Air pollution, Aerosols, Ice accretion, Antarctica—Ross Ice Shelf.

Collections have been made of several types of wet deposition and of aerosols in various particle size ranges. The chemical composition of the precipitation changes significantly from one precipitation type to another. The forms of deposition appear to be important factors controlling the concentrations and ratios of the elements which have been measured. The aerosol samples show significant changes in chemical composition with particle size, consistent with other observers' results. It is hypothesized that these changes in aerosol chemistry and those of the wet deposition are related, and that this information, combined with the theoretically supported processes of nucleation, Brownian capture, phoretic processes and impaction, provide a better insight to the physical processes involved in the removal of chemical impurities from the atmosphere. Samples examined in this study were taken from the Ross Ice Shelf. (Auth.)

39-21

United States Geological Survey in Alaska: accomplishments during 1981.

Coonrad, W.L., ed, *U.S. Geological Survey. Circular*, 1984, No.868, 162p., Numerous refs.

Elliot, R.L., ed.

Research projects, Glacial geology, Geothermometry, Geologic structures.

The compilation is composed of brief summaries of geological investigations in seven major geographical zones in Alaska, plus offshore activities and those having statewide application. Two extensive publications lists are included.

39-22

Interaction of atmosphere, ice, and ocean in Antarctica. [Interaction atmosphère, glace, océan en Antarctique],

Poggi, A., *Météorologie*, June-Sept. 1982, No.29-30, p.163-172, In French. 18 refs.

Sea ice, Ice sheets, Heat transfer.

Data on the cooling effects of surface winds on antarctic coastal regions are presented, based on studies carried out in a IAGO program from unmanned weather stations and flights of Hercules LC 130 of the National Science Foundation. Katabatic wind measurements: pressure, velocity, direction, temperature, and humidity; and measurements of degree of ground inclination are discussed and the profiles obtained are illustrated.

39-23

Numerical model of interactions between a polar ice stream, the ocean and the solid Earth: application to ice stream E, West Antarctica.

Lingle, C.S., Madison, University of Wisconsin, 1983, 165p., University Microfilms order No. 83-23387, Ph.D. thesis. Refs. p.155-165.

Ice creep, Ice models, Glacial geology, Antarctica—West Antarctica, Antarctica—Ross Ice Shelf.

A time-dependent numerical model was developed to study the dynamics of the polar ice stream E, which drains the Marie Byrd Land slope of the west antarctic ice sheet, and flows between Roosevelt Island and Shirase Coast to the calving front of the Ross Ice Shelf. Results show that the grounding line of ice stream E is close to dynamic equilibrium, neither advancing nor retreating rapidly, if the ice stream and its catchment area are approximately in mass balance. The model was also used to simulate Holocene retreat of the ice stream from the edge of the continental shelf in the Ross Sea on rigid, elastic and viscoelastic earth models. Rising eustatic sea level acted as a forcing function which initiated retreat from the edge of the continental shelf. The assumed retreat history of the calving front of the Ross Ice Shelf was found to exert dominant influence on the computed timing of grounding-line retreat. (Auth. mod.)

39-24

Two-dimensional model of coupled heat and moisture transport in frost-heaving soils.

Guymon, G.L., et al, *Journal of energy resources technology*, Sep. 1984, 106(3), MP 1765, p.336-343, 30 refs.

Hromadka, T.V., II, Berg, R.L.

Heat transfer, Moisture transfer, Frost heave, Soil freezing, Models.

The model is based upon well known equations of heat and moisture flow in soils. Numerical solution is by the nodal domain integration method which includes the integrated finite difference and the Galerkin finite element methods. Solution of the phase change process is approximated by an isothermal approach and phenomenological equations are assumed for processes occurring in freezing or thawing zones. The model has been verified against experimental one-dimensional freezing soil column data and experimental two-dimensional soil thawing tank data as well as two-dimensional soil seepage data. The model has been applied to several simple but useful field problems such as roadway embankment freezing and frost heaving. (Auth.)

39-25

Effects of temperature, stress and salinity on the creep of frozen saline soil.

Nixon, M.S., et al, *Journal of energy resources technology*, Sep. 1984, 106(3), p.344-348, 12 refs.

Pharr, G.M.

Soil temperature, Saline soils, Soil creep, Frozen ground mechanics.

39-26

Increasing economic efficiency of the intensification of fodder plant production in northern Europe. [Povyshenie ekonomicheskoi effektivnosti intensifikatsii kormoproizvodstva Evropeiskogo Severa], Podoplelov, V.P., ed, Syktyvkar, 1983, 98p., In Russian. For selected paper see 39-26. 6 refs.

Tundra, Land reclamation, Meadow soils, Grasses, Biomass.

39-27

Effectiveness of grassland establishment in tundra. [Effektivnost' zaluzheniia tundry],

Kotelina, N.S., et al, Povyshenie ekonomicheskoi effektivnosti intensifikatsii kormoproizvodstva Evropeiskogo Severa (Increasing economic efficiency of the intensification of fodder plant production in northern Europe) edited by V.P. Podoplelov, Syktyvkar, 1983, p.47-57, In Russian. 6 refs.

Archegova, I.B., Ivanov, V.A., Nazarova, V.I.

Tundra, Land reclamation, Meadow soils, Grasses, Biomass.

39-28

Cryogenesis and the formation of soil. [Kriogenez i pochvoobrazovanie],

Khudiakov, O.I., Pushchino, 1984, 196p., In Russian with English table of contents enclosed. Refs. p.190-194.

Cryogenic soils, Soil formation, Permafrost depth, Active layer, Landscape types, Taiga, Podsol, Soil composition, Permafrost thermal properties, Soil temperature, Organic soils, Swamps, Frost penetration, Human factors.

39-29

Soils of the islands and maritime regions of the Pacific Ocean: Proceedings of the 14th Scientific Congress on the Pacific Ocean, Khabarovsk, August, 1979. [Pochvy ostrovov i priokeanicheskikh regionov Tikhogo Okeana: Materialy XIV Tikhookeanskogo nauchnogo kongressa, Khabarovsk, avgust 1979 g.], Ivlev, A.M., ed, Vladivostok, 1982, 174p., In Russian. For selected papers see 39-30 and 39-31. Refs. passim.

Ignatenko, I.V., ed.

Soil science, Soil formation, Cryogenic soils, Mapping, Landscape types, Alpine landscapes, Taiga, Tundra.

39-30

Pedologic and geographic regionalization of the Far North-East. [Pochvenno-geograficheskoe raionirovanie Krainego Severo-Vostoka],

Ignatenko, N.V., et al, Pochvy ostrovov i priokeanicheskikh regionov Tikhogo okeana (Soils of islands and maritime regions of the Pacific) edited by A.M. Ivlev and I.V. Ignatenko, Vladivostok, 1982, p.44-96, In Russian. Refs. p.93-96.

Naumov, E.M., Bogdanov, I.E., Mozhitova, G.G., Pavlov, B.A.

Soil science, Soil formation, Cryogenic soils, Mapping, Landscape types, Alpine landscapes, Taiga, Arctic landscapes, Tundra, Forest tundra.

39-31

Regional characteristics of soil formation in monsoon areas after forest fires. [Regional'nye cherty poslepozharnogo pochvoobrazovaniia v mussonnoi oblasti],

Sapozhnikov, A.P., Pochvy ostrovov i priokeanicheskikh regionov Tikhogo okeana (Soils of islands and maritime regions of the Pacific) edited by A.M. Ivlev and I.V. Ignatenko, Vladivostok, 1982, p.117-124, In Russian. 11 refs.

Alpine landscapes, Forest fires, Litter, Cryogenic soils, Revegetation, Slope processes, Solifluction, Organic soils, Peat, Frost penetration.

39-32

Results of geological-geophysical studies of eastern Siberia in 1976-1980. [Rezul'taty geologo-geofizicheskogo izucheniia Vostochnoi Sibiri v 1976-1980 gg.],

Pinneker, E.V., ed, Irkutsk, 1982, 136p., In Russian. For selected papers see 39-33 through 39-37. Refs. passim.

Tunnels, Hydraulic structures, Earth dams, Permafrost beneath structures, Earthquakes, Long range forecasting, Permafrost hydrology, Brines, Naleds, Water chemistry, Mining, Permafrost thermal properties, Human factors, Environmental protection, Baykal Amur railroad, Seismic surveys, Geological surveys.

39-33
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Rojansky, M., Gerwick, B.C.
Ice loads, Offshore structures, Impact strength, Ice floes, Ice pressure, Models, Design criteria, Seasonal variations, Caissons, Platforms, Beaufort Sea.

39-85
On the optimization of ship motion in heavy ice conditions.
Nawwar, A.M., *Journal of energy resources technology*, June 1984, 106(2), p.176-182, 6 refs.
Ice navigation, Ice conditions, Ice cover thickness, Ships, Velocity, Analysis (mathematics).

39-86
Icequakes and glacier motion: the Hans Glacier, Spitsbergen.
Cichowicz, A., *Pure and applied geophysics*, 1983, 121(1), p.27-38, 19 refs.
Icequakes, Glacier flow, Ice cracks, Ice creep, Fracturing, Glacier surfaces, Stresses, Ice mechanics, Plastic deformation, Seismic surveys, Norway—Spitsbergen.

39-87
Introduction to terramechanics.
Wong, J.Y., *Journal of terramechanics*, 1984, 21(1), p.5-17, 14 refs.
Tracked vehicles, Trafficability, Environmental protection, Tundra, Muskeg, Shear stress, Terrain identification, Soil mechanics, Earthwork, Engineering, Transportation.

39-88
Improved method for predicting tracked vehicle performance.
Wong, J.Y., *Journal of terramechanics*, 1984, 21(1), p.35-43, 6 refs.
Tracked vehicles, Soil pressure, Shear stress, Trafficability, Traction, Terrain identification, Forecasting, Design.

39-89
Liquid mixtures separation in a freezing-out process.
Gradoń, L., et al, *International journal of heat and mass transfer*, Aug. 1984, 27(8), p.1141-1148, With French, German and Russian summaries. 16 refs.
Orlicki, D.
Freezing, Liquid cooling, Drying, Freeze thaw cycles, Solid phases, Mathematical models.

39-90
Comparison of Stefan model with two-phase model of coal drying.
Lyczkowski, R.W., et al, *International journal of heat and mass transfer*, Aug. 1984, 27(8), p.1157-1169, With French, German and Russian summaries. 20 refs.
Chao, Y.-T.
Coal, Freezing, Drying, Stefan problem, Heat capacity, Porous materials, Vapor pressure, Water content, Mathematical models.

39-91
Climatic variations in China during the Quaternary.
Duan, W., et al, GeoJournal, 1980, 4(6), p.515-524, 4 refs.
Pu, Q., Wu, X.
Climatic changes, Glaciation, Permafrost distribution, Pleistocene, Periglacial processes, Freeze thaw cycles, Quaternary deposits, Temperature variations, Mountains, Moraines, China.

39-92
Composite ionberg-iceberg model of aqueous nonpolar solvation and water exchange reactions.
Phillips, J.C., *Journal of chemical physics*, July 1, 1984, 81(1), p.478-483, 32 refs.
Icebergs, Ions, Molecular structure, Solutions, Microstructure, Clathrates, Models, Freezing, Pressure.

39-93
Keeping America's roads safe during winter.
Atkinson, J., *American city and county*, July 1984, 99(7), p.56-58, 62.
Snow removal, Ice removal, Winter maintenance, Road maintenance, Salting, Ice control, Safety.

39-94
Removing snow with refuse trucks. *American city and county*, July 1984, 99(7), p.61.
Snow removal, Motor vehicles, Wastes.

39-95
Histochemistry and ultrastructure of jack pine microsporangia during the winter.
Cecich, R.A., *American journal of botany*, July 1984, 71(6), p.851-864, 31 refs.
Trees (plants), Cold tolerance, Plant physiology, Chemical analysis, Electron microscopy, Seasonal variations.

39-96
Frozen soil characteristics that affect land mine functioning.
Richmond, P.W., *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1983, SR 83-05, 18p., ADA-144 308, 10 refs.
Military operation, Frozen ground mechanics, Explosion effects, Loads (forces), Mines (ordnance), Freeze thaw cycles, Stresses, Frozen ground temperature, Tensile properties, Water content.
This report discusses the results of an experiment to determine the effect of five factors on the load transferred through frozen soil to a buried land mine. The five variables examined were load, temperature, number of freeze thaw cycles, soil, and water content. *Analysis of a half-fraction factorial experiment* shows that no one variable can be used as a predictor of mine functioning performance.

39-97
Atmospheric icing on sea structures.
Makkonen, L., *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1984, M 84-02, 92p., ADA-144 448, Refs. p.77-92.
Icing, Offshore structures, Ice accretion, Ice prevention, Ice adhesion, Ice solid interface, Ice physics, Climatic factors, Ice loads, Supercooling, Analysis (mathematics), Design.
Atmospheric icing (*icing due to fog, precipitation and water* vapor in air) as a physical process and the problems it causes for ships and stationary offshore structures are reviewed. Estimation of the probability and severity of atmospheric icing based *on climatological and geographical factors* is discussed, and theoretical methods for calculating the intensity of atmospheric icing at sea are suggested. Existing data on the dependence of the atmospheric icing rate and the properties of the accreted ice on the meteorological conditions are analyzed. The *methods* of measuring the icing rate and ice prevention *methods* are discussed.

39-98
Mechanical properties of multi-year sea ice. Phase 1: Test results.
Cox, G.F.N., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1984, CR 84-09, 105p., ADA-144 132, 21 refs.
Richter-Menge, J.A., Weeks, W.F., Mellor, M., Bosworth, H.
Ice mechanics, Sea ice, Pressure ridges, Ice strength, Compressive properties, Tensile properties, Static loads, Ice physics, Ice sampling, Ice floes, Statistical analysis.
This report presents the results of the first phase of a test program designed to obtain a comprehensive understanding of the mechanical properties of multi-year sea ice from the Alaskan Beaufort Sea. In Phase 1, 222 constant-strain-rate uniaxial compression tests were performed on ice samples *from* ten multi-year pressure ridges to examine the magnitude and variation of ice strength *within* and between pressure ridges. A limited number of constant-strain-rate compression and tension tests, constant-load compression tests, and conventional triaxial tests were also performed on ice samples from a multi-year floe to provide preliminary data for developing ice yield criteria and constitutive laws for multi-year sea ice. Data are presented on the strength, failure strain, and modulus of multi-year sea ice under different loading conditions. The *statistical variation* of ice strength within and between pressure ridges is examined, as well as the *effects* of *ice temperature*, porosity, structure, strain rate and confining pressure on the mechanical properties of *multi-year sea ice*.

39-99
Repeated nucleation of a supercooled water sample that contains silver iodide particles.
Vonnegut, B., et al, *Journal of climate and applied meteorology*, Mar. 1984, 23(3), p.486-490, 10 refs.
Baldwin, M.
Ice nuclei, Supercooling, Water chemistry, Silver iodide, Ice formation, Temperature effects, Experimentation.

39-100
Orientation measurements on the block material of rock glaciers in the southern Alps. Introduction of coefficients for rock glacier studies. [Mesures d'orientations de blocs sur quelques glaciers rocheux des Alpes du Sud. Etablissement de coefficients permettant l'étude des glaciers rocheux],
Evin, M., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1983, 18(2), p.107-126, In French with German and English summaries. 18 refs.
Assier, A.
Rock glaciers, Glacier flow, Glacier surfaces, Surface roughness, Ice mechanics.

39-101
Permafrost mapping in the region of the Hochebenkar rock glaciers, Obergurgl, Ötztal Alps. [Permafrostkartierung im Gebiet der Hochebenkar-Blockgletscher, Obergurgl, Ötztaler Alpen],
Haeberli, W., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1983, 18(2), p.127-150, In German with French and English summaries. Refs. p.148-150.
Patzelt, G.
Permafrost distribution, Rock glaciers, Snow temperature, Active layer, Mapping, Seismic refraction, Mountains, Rheology, Sediments, Temperature distribution, Austria—Alps.

39-102
Isotopic composition of ice and subglacially precipitated calcite in an alpine area.
Lemmens, M., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1983, 18(2), p.151-159, With German and French summaries. 15 refs.
Lorrain, R., Haren, J.
Ice composition, Glacial deposits, Isotope analysis, Glacier oscillation, Subglacial caves, Water chemistry, Pleistocene.

39-103
New mass budget of Hintereisfernerr and Kesselwandferner during the years of 1977/78-1980/81. [Hintereisferner-Kesselwandferner: neue Haushaltswerte von den Jahren 1977/78-1980/81],
Markl, G., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1983, 18(2), p.161-167, In German with English summary.
Glacier mass balance, Glacier ablation, Glacier alimentation, Statistical analysis, Seasonal variations.

39-104
Permafrost advances: report of the Fourth International Conference on Permafrost.
Péwé, T.L., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1983, 18(2), p.169-174.
Permafrost, Frozen ground, Rock glaciers, Meetings, Exploration, International cooperation.

39-105
Glaciers of the Austrian Alps, 1981/82. [Die Gletscher der Österreichischen Alpen 1981/82],
Patzelt, G., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1983, 18(2), p.175-190, In German.
Glacier surveys, Glacier oscillation, Mountain glaciers, Austria—Alps.

39-106
Follow-up measurements, Pasterze (Glockner Group) 1982. [Nachmessungen im Bereich der Pasterze (Glocknergruppe) im Jahre 1982],
Wakonigg, H., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1983, 18(2), p.191-197, In German.
Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier ablation, Glacier tongues, Austria—Pasterze.

39-107
Follow-up measurements of total beta activity from fission products deposited in firn. [Nachmessungen der Gesamt-Beta-Aktivität von Spalt-Produktablagerungen im Firn],
Ambach, W., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1983, 18(2), p.199-200, In German.
Rehwald, W.
Ice composition, Firn, Fallout.

39-108
Proceedings, Vol.2. Engineering mechanics in civil engineering.
Engineering Mechanics Division Specialty Conference, 5th, Laramie, WY, Aug. 1-3, 1984, New York, American Society of Civil Engineers, 1984, p.735-1547, Refs. passim. For selected papers see 39-109 through 39-113.
Boresi, A.P., ed, Chong, K.P., ed.
Engineering, Frozen ground strength, Concrete freezing, Rheology, Avalanche mechanics, Stress strain diagrams, Meetings.

39-109
Discontinuous turbidity currents and power snow avalanches.
Fukushima, Y., et al, Engineering Mechanics Division Specialty Conference, 5th, Laramie, WY, Aug. 1-3, 1984. Proceedings, Vol.2. Edited by A.P. Boresi and K.P. Chong, New York, American Society of Civil Engineers, 1984, p.839-842, 10 refs.
Parker, G.
Avalanche mechanics, Avalanche wind, Turbidity, Thermal properties, Velocity, Analysis (mathematics).

39-110
Creep model for constant stress and constant strain rate.
Fish, A.M., MP 1766, Engineering Mechanics Division Specialty Conference, 5th, Laramie, WY, Aug. 1-3, 1984. Proceedings, Vol.2. Edited by A.P. Boresi and K.P. Chong, New York, American Society of Civil Engineers, 1984, p.1009-1012, 5 refs.
Rheology, Stress strain diagrams, Creep, Stresses, Strains, Tests, Thermodynamics.

39-111
Improved non-linear model for ice.
Szyszkowski, W., et al, Engineering Mechanics Division Specialty Conference, 5th, Laramie, WY, Aug. 1-3, 1984. Proceedings, Vol.2. Edited by A.P. Boresi and K.P. Chong, New York, American Society of Civil Engineers, 1984, p.1032-1035, 5 refs.
Glockner, P.G.
Ice mechanics, Ice models, Ice loads, Ice creep, Viscoelastic materials, Stresses, Mathematical models.

39-112
Roughness criterion for steel piles in frozen sand.
Alwahhab, M.R.M., et al, Engineering Mechanics Division Specialty Conference, 5th, Laramie, WY, Aug. 1-3, 1984. Proceedings, Vol.2. Edited by A.P. Boresi and K.P. Chong, New York, American Society of Civil Engineers, 1984, p.1288-1291, 4 refs.
Andersland, O.B.
Pile load tests, Frozen ground strength, Sands, Friction, Shear strength, Steel structures, Surface roughness, Ice adhesion, Loads (forces).

39-113
Microcracking of concrete submitted to premature freezing.
Houde, J., Engineering Mechanics Division Specialty Conference, 5th, Laramie, WY, Aug. 1-3, 1984. Proceedings, Vol.2. Edited by A.P. Boresi and K.P. Chong, New York, American Society of Civil Engineers, 1984, p.1424-1427, 4 refs.
Concrete freezing, Cracking (fracturing), Concrete strength, Concrete curing, Microstructure, Temperature effects, Time factor.

39-114
Botanical-geographic characteristics of steppe vegetation in interior Alaska. [Botaniko-geograficheskaia kharakteristika stepnoĭ rastitel'nosti vnutrenneĭ Aliaski],
IUrtsev, B.A., *Botanicheskiĭ zhurnal*, June 1984, 69(6), p.743-752, In Russian with English summary. 23 refs.
Steppes, Mountain soils, Soil temperature, Slope orientation, Plant ecology, Taiga, Ecosystems, Cryogenic soils.

39-115
Establishment of floristic belts in mountains of the southwestern part of the Putorana Plateau. [Vyiavlenie floristicheskikh poiasov v gornykh raionakh (na primere iugo-zapadnoĭ chasti plato Putorana)],
Ukhacheva, V.N., et al, *Botanicheskiĭ zhurnal*, June 1984, 69(6), p.753-761, In Russian with English summary. 17 refs.
Kozhevnikov, IU.P.
Alpine tundra, Plant ecology, Alpine landscapes, Vegetation patterns, Altitude, Ecosystems, Cryogenic soils, Classifications.

39-116
Quantitative comparison of eight concrete floras of Taymyr by their taxonomic structure (Arctic Central Siberia). [Kolichestvennoe sravnenie vos'mi konkretnykh flor Taĭmyra po ikh taksonomicheskoĭ strukture (Arkticheskaia Sredniaia Sibir')],
Sokolova, M.V., *Botanicheskiĭ zhurnal*, June 1984, 69(6), p.840-849, In Russian. 15 refs.
Forest tundra, Plant ecology, Ecosystems, Arctic landscapes, Alpine landscapes, Tundra, Subarctic landscapes.

39-117
Rock glaciers. [Kamennye gletchery],
Gorbunov, A., *Nauka i zhizn'*, 1984, No.7, p.112-113, In Russian.
Slope processes, Talus, Rock streams, Rock glaciers, Glacial deposits, Moraines, Alpine landscapes, Frost penetration, Ground ice, Glacier formation, Glacier flow.

39-118
Influence of felling and reforestation on river discharge in the southern and central taiga subzones. [Vliianie vyrubki i vosstanovleniia lesov na vodnost' rek podzon iuzhnoĭ i srednet taigi],
Krestovskiĭ, O.I., *Vodnye resursy*, Sep.-Oct. 1984, No.5, p.125-135, In Russian. 29 refs.
Runoff, Forestry, Revegetation, Meltwater, Taiga, River flow.

39-119
Pollination and self-pollinating potential in entomophilous plants of the Arctic and Alpine tundras of the northeastern USSR. [Opylenie i samoopylitel'nyĭ potentsial entomofil'nykh rasteniĭ arkticheskikh i gornykh tundr Severo-Vostoka SSSR],
Tikhmenev, E.A., *Ekologiia*, July-Aug. 1984, No.4, p.8-15, In Russian. 27 refs.
Alpine tundra, Plant physiology, Pollen, Ecosystems, Plant ecology, Arctic landscapes, Tundra.

39-120
Metabolism of the chlororganic combinations in taiga biogeocenoses. [Metabolizm khlororganicheskikh soedineniĭ v taezhnykh biogeotsenozakh],
Dmitrienko, V.K., et al, *Ekologiia*, July-Aug. 1984, No.4, p.21-29, In Russian. 20 refs.
Michurina, L.R.
Forest soils, Soil pollution, Taiga, Cryogenic soils, Insecticides.

39-121
Phenological inversions in western Tien Shan. [Fenologicheskie inversii v gornoĭ mestnosti (zapadnyĭ Tian'-Shan')],
Lynov, IU.S., *Ekologiia*, July-Aug. 1984, No.4, p.29-33, In Russian. 21 refs.
Plant ecology, Soil temperature, Plant physiology, Alpine landscapes, Soil water migration, Slope orientation, Ecosystems, Cryogenic soils, Seasonal variations, Snow cover effect.

39-122
New three-dimensional structures based on standard cylindrical blocks. [Novye prostranstvennye konstruktsii na osnove tsilindricheskikh unifitsirovannykh blokov],
Zreliakov, V.A., et al, *Stroitel'stvo truboprovodov*, Aug. 1984, No.8, p.16-17, In Russian.
Shapiro, A.L.
Residential buildings, Industrial buildings, Prefabrication, Permafrost beneath structures, Construction materials, Heating.

39-123
Estimating the technical state of northern gas pipelines from aerial photographs. [Otsenka tekhnicheskogo sostoianiia trass severnykh gazoprovodov po materialam aerofotos"emok],
Marakhtanov, V.P., et al, *Stroitel'stvo truboprovodov*, Aug. 1984, No.8, p.35-37, In Russian. 3 refs.
Khrenov, N.N.
Roads, Gas pipelines, Permafrost beneath structures, Embankments, Aerial surveys, Photointerpretation, Taiga, Buildings, Swamps.

39-124
On the Far Eastern meridians. [Na dal'nevostochnykh meridianakh],
Vol'mer, IU., *Morskoĭ flot*, 1984, No.7, p.20-23, In Russian.
Ice navigation, Sea ice distribution, Ice cover thickness, Ice cutting, Icebreakers, Ice breaking, Arctic Ocean.

39-125
Last reconnaissance. [Posledniaia razvedka],
Popov, S., *Morskoĭ flot*, 1984, No.7, p.23-25, In Russian.
Ice navigation, Icebreakers, Sea ice distribution, Ice cover thickness, Ice cutting, Arctic Ocean.

39-126
Isotopes in antarctic research—contributions of the GDR II.
Akademie der Wissenschaften der DDR. Zentralinstitut für Isotopen- und Strahlenforschung. ZFI-Mitteilungen, No.89, Leipzig, 1984, 132p., For individual papers see 39-126 through 39-129, or B-30456, E-30451, E-30453, E-30454, E-30457, F-30450, I-30452, and I-30455.
Radioactive isotopes, Atmospheric composition, Ice composition.
Most of the samples collected and studied derived from the Schirmacher Ponds region and the Wohlthat Massif in Dronning Maud Land. The eight papers in this collection treat isotopic materials found in precipitation, lake waters, water vapor, bird breeding places and basalt dykes.

39-127
Tritium in antarctic precipitation—information on global distribution.
Hebert, D., *Akademie der Wissenschaften der DDR. Zentralinstitut für Isotopen- und Strahlenforschung ZFI-Mitteilungen*, May 1984, No.89, p.7-22, 25 refs.
Firn, Chemical composition, Radioactive isotopes, Atmospheric composition, Antarctica—Queen Maud Land.
The secular variation in the tritium content of precipitation, particularly in the polar regions is investigated by mathematical

treatment of a compartment model of exchangeable atmospheric reservoirs. Exchange coefficients are calculated to be 0.35/year and 0.18 year for interstratospheric exchange and exchange between stratosphere and troposphere, respectively. The tritium altitude effect and a special Antarctic continental effect are discussed. (Auth.)

39-128
Isotope-hydrological and hydrochemical studies of the interior antarctic lake "Untersee" in the Wohlthat Massif, Dronning-Maud Land (East Antarctica).
Hermichen, W.-D., et al, *Akademie der Wissenschaften der DDR. Zentralinstitut für Isotopen- und Strahlenforschung. ZFI-Mitteilungen*, May 1984, No.89, p.75-86, 18 refs.
Grelle, M., Kowski, P., Kurze, W., Wand, U.
Lake ice, Ice sublimation, Water chemistry, Limnology, Hydrology, Antarctica—Unter-See, Lake.
In the course of field work done during the 26th Soviet Antarctic Expedition, members of the Central Institute for Isotope and Radiation Research, Leipzig, carried out an initial measuring and sampling program on Lake Untersee in March 1982. The data gave the following model of the origin and evolution of this largest interior Antarctic fresh-water lake. The lake came into existence as a melt-water lake during a climatically favourable time in the post-Pleistocene period. A homogenization of the entire body of water is presently taking place in the austral summer due to convection. Evidence for this is provided by the constancy of the water temperature, the isotope data, and the degree of salt concentration. Tritium content is 0 T.U., the lake being fed exclusively, via subaquatic melting processes, with "pre-bomb age" inland ice. Satellite photographs show nothing but bare ice zones in the more distant areas surrounding Lake Untersee. Thawing proceeding in the lake's vicinity are of no consequence at present. The data suggest a permanent ice cover of the lake during its post-Pleistocene existence. The lake is constantly losing water through sublimation on the surface of the more than 2.5 m thick ice cover and freezing of lake water at its bottom; at the present time, it is the remainder of a many times greater amount of melt water. It is still unknown whether the lake's mass balance is in a state of equilibrium. (Auth.)

39-129
Isotope-glaciological situation in the surroundings of the Schirmacher Oasis/Dronning Maud Land—a first overview.
Hermichen, W.-D., et al, *Akademie der Wissenschaften der DDR. Zentralinstitut für Isotopen- und Strahlenforschung. ZFI-Mitteilungen*, May 1984, No.89, p.87-102, 15 refs.
Kowski, P., Strauch, G.
Oxygen isotopes, Ice sheets, Ice shelves, Glacier ice, Antarctica—Schirmacher Ponds.
Isotope studies of shelf and inland ice in the surroundings of the Schirmacher Oasis show that both the basal zone of the ice shelf and a base layer of inland ice with a thickness of several tens of metres, represent relics of the thick Late Pleistocene ice cap of Dronning Maud Land. The thicker upper part of the inland ice sheet is, up to the foreland of the Wohlthat Massif, composed of post-Pleistocene local precipitation. The isotope-stratigraphic division of the Novolazarevskaya Ice Shelf shows an approximately 200 m thick layer between the Pleistocene base and younger local firn-ice formations which is formed by the recent outflow of the Wegener Inland Ice. (Auth.)

39-130
Efficiency of railroad transportation of earth when building second railroad tracks. {Effektivnost' poezdnoĭ vozki grunta pri stroitel'stve vtorykh putej},
Drukker, A.V., *Transportnoe stroitel'stvo*, Aug. 1984, No.8, p.6-7, In Russian. 2 refs.
Frozen cargo, Railroad tracks, Subgrades, Unloading, Embankments, Earthwork, Cost analysis, Transportation, Cold weather construction.

39-131
Increasing the efficiency of repairing construction equipment. {Rezervy povysheniia effektivnosti sistemy remonta tekhniki v transportnom stroitel'stve},
Bardyshev, O.A., *Mekhanizatsiia stroitel'stva*, Aug. 1984, No.8, p.22-24, In Russian.
Earthwork, Road maintenance, Subgrade maintenance, Construction equipment, Winter maintenance, Dams, Frost action, Transportation, Embankments, Baykal Amur railroad.

39-132
GLAVMOSSTROY's participation in an extensive exhibition. {V shirokoĭ ekspozitsii opyt Glavmosstroia},
Riaboshapko, B.I., *Mekhanizatsiia stroitel'stva*, Aug. 1984, No.8, p.24-27, In Russian.
Tracked vehicles, Construction equipment, Drills, Earthwork, Hammers, Excavation, Permafrost, Freeze thaw cycles, Frozen ground strength.

39-133
Experience of building structural complexes associated with the Transsiberian main railroad. {Iz opyta formirovaniia prizheleznodorozhnykh kompleksov Transsibirskoĭ magistrali},
Smirnova, E.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1984, No.6, p.60-64, In Russian. 5 refs.
Roadbeds, Subgrades, Embankments, Industrial buildings, Hydraulic structures, Permafrost beneath structures, Baykal Amur railroad, Roads.

39-134
Allowing for thermal stability of enclosures when determining economically efficient resistance to heat transfer. {Uchet teploustoĭchivosti ograzhdeniĭ pri opredelenii ekonomicheski tselesoobraznogo soprotivleniia teploperedache},
Moskalev, A.S., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1984, No.6, p.102-105, In Russian. 6 refs.
Shevchuk, I.A.
Walls, Heat loss, Heat transfer, Heating, Buildings, Cost analysis.

39-135
Studying additional heat losses related to the structure of heating devices. {Issledovanie dopolnitel'nykh poter' tepla v zavisimosti ot konstruktsiĭ nagrevatel'nykh priborov},
Ral'chuk, N.T., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1984, No.6, p.105-109, In Russian. 9 refs.
Residential buildings, Heating, Heat loss, Electric heating, Walls, Heat transfer.

39-136
Method of establishing requirements for reforestation work in operational taiga-zone forests. {Metod obosnovaniia ob"emov lesovosstanovitel'nykh meropriiatiĭ v ekspluatatsionnykh lesakh taezhnoĭ zony pri lesoustroĭstve},
Poiurovskaia, R.I., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Lesnoĭ zhurnal*, 1984, No.4, p.121-122, In Russian. 7 refs.
Moshkalev, A.G.
Taiga, Forestry, Revegetation, Forest soils, Cryogenic soils.

39-137
Device for thawing frozen saw-logs. {Ustroĭstvo dlia ottaivaniia promerzshikh pilovochnykh brevenj},
Smetanin, A.S., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Lesnoĭ zhurnal*, 1984, No.4, p.133-135, In Russian.
Sysoev, L.A., Ergin, V.A.
Forestry, Defrosting, Heating, Equipment.

39-138
Morphology of some periglacial features on South Georgia and their relationship to local environment.
Heilbronn, T.D., et al, *British Antarctic Survey. Bulletin*, Aug. 1984, No.64, p.21-36, 29 refs.
Walton, D.W.H.
Patterned ground, Soil temperature, Periglacial processes, Snow depth, Ice needles, South Georgia.
Small sorted stripes, large vegetated unsorted stripes, large unsorted circles and two types of solifluction lobes are described by means of vertical sections and particle-size analysis. Where possible, vegetation is related to periglacial morphology. Soil temperature patterns and depth and duration of snow lie are related to periglacial activity for some features. Sorting in the stripes appears to be only superficial and takes place almost wholly in autumn. There is little sign of downslope movement of the solifluction lobes. The role of needle ice is discussed. (Auth.)

39-139
***Construction monitoring report*: National Petroleum Reserve—Alaska; oil and gas exploration program, fiscal year 1981.**
Tetra Tech, U.S. Geological Survey, Contract No.14-08-0001-20203, Anchorage, Alaska, Apr. 1984, 4 parts.
Cold weather construction, Permafrost preservation, Soil compaction, Frost resistance, Active layer, Soil water, Water content, Drilling, Geology, Wells, Exploration.

39-140
Polymers in space research.
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Segal, C.L., ed.
Polymers, Low temperature tests, Molecular structure, Relaxation (mechanics), Adhesion, Temperature effects, Heat capacity, Thermal properties, Tensile properties, Friction, Stress strain diagrams, Rubber, Dielectric properties.

39-141
***Quaternary period* in Manchuria.**
Shikama, T., Geology and mineral resources of the Far East. Edited by T. Ogura, Tokyo, University of Tokyo Press, 1967, p.298-336, Refs. p.334-336.
Quaternary deposits, Permafrost, Geology, Loess, Fossils, Stratigraphy, Classifications, Manchuria.

39-142
Laboratory methods for determining moisture absorption of thermal insulations.
Bomberg, M., *Journal of thermal insulation*, Apr 1983, Vol.6, p.232-249, 25 refs.
Thermal insulation, Freeze thaw cycles, Moisture, Absorption, Tests.

39-143
CODATA directory of data sources for science and technology. Chapter 9: Snow and ice.
Barry, R.G., ed, *International Council of Scientific Unions. Committee on Data for Science and Technology. CODATA bulletin*, Feb. 1984, No.53, 87p.
Snow surveys, Ice surveys, Data processing, Organizations, Directories.

39-144
Parametrization of the shortwave flux over high albedo surfaces as a function of cloud thickness and surface albedo.
Shine, K.P., *Royal Meteorological Society. Quarterly journal*, July 1984, 110(465), p.747-764, 31 refs.
Snow optics, Ice optics, Albedo, Cloud cover, Wave propagation, Spectra, Freeze thaw cycles, Surface properties.

39-145
Temperature dependence of secondary ice crystal production during soft hail growth by riming.
Heymsfield, A.J., et al, *Royal Meteorological Society. Quarterly journal*, July 1984, 110(465), p.765-770, 11 refs.
Mossop, S.C.
Ice crystal growth, Hailstone growth, Cloud droplets, Temperature effects, Surface temperature, Cloud physics, Unfrozen water content, Supercooled clouds, Experimentation.

39-146
Aerial photographic interpretation of coarse-grained till.
Viberg, L., *Striae*, 1984, Vol.20, p.15-16, 12 refs.
Glacial deposits, Photointerpretation, Aerial surveys, Construction materials, Moraines, Glacial till, Roads, Subgrades, Foundations.

39-147
Till in Swedish road construction.
Johansson, H.G., *Striae*, 1984, Vol.20, p.95-98, 6 refs.
Roads, Gravel, Sands, Subgrades, Foundations, Construction materials, Soil freezing, Frost heave, Glacial till.

39-148
Production of road construction material from till.
Knutz, A., *Striae*, 1984, Vol.20, p.99-100.
Roads, Transportation, Subgrades, Construction materials, Glacial till, Cost analysis.

39-149
Evolution of mushroom-shaped oceanic currents. {Evolutsiia gribovidnykh techeniĭ v okeane},
Ginzburg, A.I., et al, *Akademiia nauk SSSR. Doklady*, 1984, 276(2), p.481-484, In Russian. 3 refs.
Fedorov, K.N.
Spaceborne photography, Ocean currents, Sea ice distribution, Drift, Ice floes, Water transport.

39-150
Distribution and migration of hydrocarbon gases in permafrost regions. {Osobennosti raspredeleniia i migratsii uglevodorodnykh gazov v rationakh rasprostraneniia mnogoletnemerzlykh porod},
Starobinets, I.S., et al, *Akademiia nauk SSSR. Doklady*, 1984, 276(3), p.703-707, In Russian. 6 refs.
Murogova, R.N., Trufanova, S.F.
Natural gas, Permafrost structure, Porosity, Hydrocarbons, Exploration, Permeability, Screening effect.

39-151
Determination of frost-heave forces in soils.
Tishin, V.G., et al, *Soil mechanics and foundation engineering*, Nov.-Dec. 1983 (Publ. May 84), 20(6), p.240-243, Translated from Osnovaniia, fundamenty i mekhanika gruntov.
Natrov, G.V.
Frost penetration, Soil water migration, Ice formation, Frost heave, Stresses, Soil freezing, Frozen fines, Measuring instruments.

39-152
Temperature regime of permafrost in the bed of a gas pipeline.
Gokhman, M.R., *Soil mechanics and foundation engineering*, Nov.-Dec. 1983 (Publ. May 84), 20(6), p.243-247, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 7 refs.
Gas pipelines, Embankments, Permafrost beneath structures, Active layer, Surface temperature, Ground thawing, Seasonal freeze thaw, Heat transfer, Snow cover effect, Soil temperature.

39-153
Blast waves in frozen soils.
Liakhov, G.M., et al, *Journal of applied mechanics and technical physics*, Nov.-Dec. 1983 (Publ. May 84), 24(6), p.811-815, Translated from Zhurnal prikladnoĭ mekhaniki i tekhnicheskoĭ fiziki. 7 refs.
Frash, G.B.
Soil freezing, Seasonal freeze thaw, Frozen ground, Blasting, Ground ice, Wave propagation, Soil temperature, Unfrozen water content.

39-154
Prudhoe Bay Waterflood Project; Environmental monitoring program 1983.
U.S. Army Corps of Engineers. Alaska District, Anchorage, Alaska, July 1984, 3 vols.
Ecosystems, Environmental protection, Tundra, Cold weather construction, Oceanography, Snow cover, Research projects, Sediment transport, Shore erosion, Climatic factors, United States—Alaska—Prudhoe Bay.

39-155
Beryllium in sulfates of the cryolithic zone south of Verkhoyansk.
Kokin, A.V., *Akademiia nauk SSSR. Doklady. Earth science sections*, Nov.-Dec. 1982, Vol.267, p.200-201, 5 refs. For Russian original see 37-3122.
Permafrost distribution, Mining, Frozen rock temperature, Frozen rock strength, Fracture zones, Minerals, Permafrost structure.

39-156
Peculiarities of year-to-year variations in water circulation in the Arctic Basin. [Osobennosti mezhgodovoĭ izmenchivosti tsirkuliatsii vod Arkticheskogo basseĭna],
Beliakov, L.N., et al, *Akade nauk SSSR. Doklady*, 1984, 276(4), p.946-949, In Russian. 10 refs.
Volkov, V.A., Ponomarev, V.I., Chernyshov, A.F.
Ocean currents, Water transport, Sea ice distribution, Drift, Arctic Ocean.

39-157
Satellite technique and the development of modern concepts in ocean dynamics. [Sputnikovye metody i razvitie sovremennykh predstavleniĭ o dinamike okeana],
Fedorov, K.N., *Issledovanie Zemli iz kosmosa*, July-Aug. 1984, No.4, p.3-13, In Russian with English summary. 54 refs.
Radiometry, Ocean currents, Ice surveys, Water transport, Sea ice distribution, Drift, Spaceborne photography, Wind factors, Ice navigation, Ice reporting.

39-158
Application of a layered-medium statistical model for calculating thermal emission of ice covers. [Primenenie statisticheskoĭ modeli sloistoĭ sredy dlia rascheta teplovogo izlucheniia ledianykh pokrovov],
Brekhovskikh, V.L., *Issledovanie Zemli iz kosmosa*, July-Aug. 1984, No.4, p.33-38, In Russian with English summary. 7 refs.
Sea ice distribution, Water temperature, Ice temperature, Thermal radiation, Ice physics, Mathematical models.

39-159
Using space imagery in the compilation of landscape maps on different scales. [Sostavlenie raznomasshtabnykh landshaftnykh kart s ispol'zovaniem kosmicheskoĭ fotoinformatsii],
Riabchikova, V.I., *Issledovanie Zemli iz kosmosa*, July-Aug. 1984, No.4, p.39-45, In Russian with English summary. 7 refs.
Mapping, Arctic landscapes, Permafrost distribution, Alpine landscapes, Spaceborne photography, Tundra, Swamps, Cryogenic soils, Slope processes, Solifluction, Hydrothermal processes, Permafrost transformation.

39-160
Technologic process of coating the walls of construction tunnels with light-weight sprayed concrete and installing anchors, when the rocks are water-permeable. [Tekhnologiia vozvedeniia oblegchennoĭ obdelki stroitel'nogo tunnelia iz nabryzgbetona i ankerov v usloviiakh fil'truiushchikh porod],
Mishin, V.V., et al, *Energeticheskoe stroitel'stvo*, Aug. 1984, No.8, p.25-27, In Russian.
Il'in, S.A., Zaĭtsev, M.V., Godzhiashvili, U.I., Chaava, M.N.
Tunnels, Linings, Lightweight concretes, Anchors, Winter concreting, Concrete hardening, Concrete freezing, Concrete strength.

39-161
Calculating thermal regime when building hydraulic tunnels under complicated conditions. [Raschet teplovogo rezhima pri provedenii gidrotekhnicheskikh tunneleĭ v slozhnykh usloviiakh],
Zimin, L.B., et al, *Energeticheskoe stroitel'stvo*, Aug. 1984, No.8, p.33-34, In Russian. 5 refs.
Kachalina, L.P., Malashenko, E.N., Reznikov, M.A.
Tunneling (excavation), Permafrost structure, Mining, Permafrost thermal properties, Permafrost control, Air temperature, Thermal regime.

39-162
Proceedings.
Symposium on Ice and Climate Modelling, Evanston, IL, June 27-July 1, 1983, *Annals of glaciology*, 1984, Vol.5, 243p., Refs. passim. For individual papers see 39-163 through 39-197 or F-30479 through F-30485.
Ice models, Ice surveys, Snow surveys, Ice cores, Climatic changes, Paleoclimatology, Meetings, Ice conditions, Models.
The symposium brought glaciologists into direct contact with modelers of the Earth's climates during interglacials (such as the present) and glacial episodes. The purpose of mutual familiarization was served by reviews of the hierarchies which now exist for models of atmosphere, ocean, and climate. These reviews emphasized the actual or potential uses of ice data and parameterizations, and both general and specific aspects of coupling and sensitivity testing. The glaciologists in their turn reviewed the problems of exploring different ice forms and simulating their responses to climatic forcing. The most significant results concerned atmospheric concentrations of carbon dioxide deduced from ice core analyses. Topics recommended for priority attention include contemporaneous changes in the properties of ice cores from Greenland and Antarctica, links between weather sequences and the stable isotope contents of polar precipitation, systematic intercomparisons of a wide range of model results, and the construction of intermediate-complexity sea-ice models for use in climate simulations. The volume includes 35 papers given in full and abstracts of an additional 31 papers.

39-163
Mechanical properties of Dye 3 Greenland deep ice cores.
Azuma, N., et al, *Annals of glaciology*, 1984, Vol.5, p.1-8, 10 refs.
Higashi, A.
Ice mechanics, Ice cores, Rheology, Compressive properties, Stress strain diagrams, Shear stress, Ice crystal structure, Grain size.

39-164
Sea-ice and snow-cover data availability, needs and problems.
Barry, R.G., et al, *Annals of glaciology*, 1984, Vol.5, p.9-15, 26 refs.
Crane, R.G., Weaver, R.L., Anderson, M.A.
Sea ice distribution, Snow cover, Ice conditions, Ice cover thickness, Snow depth, Climate, Models, Snow water content, Drift, Computer applications.

39-165
Temporal variations in the 10 Be concentration levels found in the Dye 3 ice core, Greenland.
Beer, J., et al, *Annals of glaciology*, 1984, Vol.5, p.16-17, 7 refs.
Oeschger, H., Andrée, M., Bonani, G., Suter, M., Wolfli, W., Langway, C.C., Jr.
Ice composition, Ice cores, Drill core analysis, Chemical analysis, Radioactive isotopes, Aerosols, Precipitation (meteorology), Glaciation, Greenland.

39-166
Modelling temperature distribution in Alpine glaciers.
Blatter, H., et al, *Annals of glaciology*, 1984, Vol.5, p.18-22, 22 refs.
Haeberli, W.
Glacier ice, Ice temperature, Mountain glaciers, Glacier surveys, Glacier flow, Models, Temperature distribution, Climatic factors, Switzerland.

39-167
Rheology of an ice floe field.
Bratchie, I., *Annals of glaciology*, 1984, Vol.5, p.23-28, 13 refs.
Sea ice, Ice floes, Rheology, Ice mechanics, Stresses, Strains, Ice models, Analysis (mathematics), Ice conditions, Ice strength.

39-168
A three-dimensional time-dependent model of the West Antarctic ice sheet.
Budd, W.F., et al, *Annals of glaciology*, 1984, Vol.5, p.29-36, 33 refs.
Jenssen, D., Smith, I.N.
Rheology, Ice models, Ice sheets, Ice mechanics, Ice deformation, Sliding, Ice creep, Shear stress, Ice cover thickness, Temperature distribution, Velocity, Ice temperature, Antarctica—Ross Ice Shelf.
The area of West Antarctica which drains into the Ross Ice Shelf is examined for the purpose of understanding its dynamics and developing a numerical model to study its reaction to environmental changes. A high resolution 20 km grid is used to compile a database for surface and bedrock elevation, accumulation, and surface temperatures. Balance velocities are computed and found to approximate observed velocities. (Auth.)

39-169
Prospects for describing and monitoring from space the elements of the seasonal cycle of sea ice.
Carsey, F.D., *Annals of glaciology*, 1984, Vol.5, p.37-42, 17 refs.
Sea ice distribution, Remote sensing, Microwaves, Ice conditions, Ice surveys, Seasonal variations, Climatic factors, Snow cover, Albedo.

39-170
Reconstructing Pleistocene climatic change from the oxygen isotope composition of sediments: a review.
Covey, C., *Annals of glaciology*, 1984, Vol.5, p.43-46, 15 refs.
Climatic changes, Precipitation (meteorology), Pleistocene, Oxygen isotopes, Ice dating, Bottom sediment, Ocean bottom, Ice volume.

39-171
Ice-shelf densities from a comparison of radio echo and seismic soundings.
Doake, C.S.M., *Annals of glaciology*, 1984, Vol.5, p.47-50, 11 refs.
Ice shelves, Seismic reflection, Radio echo soundings, Ice density, Ice cover thickness, Analysis (mathematics), Antarctica—Antarctic Peninsula.
A 40 km line across George VI Ice Shelf was sounded in January 1981 by both radio echo and seismic reflection methods. Because the velocities of radio and seismic waves vary with ice density in different ways, an accurate comparison of travel times from the two methods allowed the average density of the ice shelf to be calculated. A distinguishable echo from the base of the ice shelf was recorded at 22 out of 23 seismic stations. Continuous radio echo profiling was achieved in ice varying in thickness from about 200 to 350 m. The calculated mean densities fell into two groups. In an area where summer meltwater frequently floods the surface the average densities were around 0.915 Mg/cu m while in the drier areas the average densities were around 0.884 Mg/cu m. Apart from this division, there was no apparent systematic variation of average density with position. The sounding was carried out approximately along a flowline on the ice shelf. The variation of ice density with depth and position is difficult to allow for when modelling the deformation of ice shelves. Measured values of surface strain-rate, for example, may in some circumstances need to be corrected for effects due to the compressibility of snow. (Auth.)

39-172
Measurement of surface deformation of the Greenland ice sheet by satellite tracking.
Drew, A.R., et al, *Annals of glaciology*, 1984, Vol.5, p.51-55, 7 refs.
Whillans, I.M.
Ice sheets, Ice deformation, Surface properties, Remote sensing, Strains, Ice mechanics, Greenland.

39-173
Geothermal effects of 18 ka BP ice conditions in the Swiss plateau.
Haeberli, W., et al, *Annals of glaciology*, 1984, Vol.5, p.56-60, 27 refs.
Rellstab, W., Harrison, W.D.
Alpine glaciation, Ice conditions, Surface temperature, Paleoclimatology, Geothermy, Sediments, Temperature variations, Glacier beds, Models, Quaternary deposits, Switzerland.

39-174
Cryospheric impacts of Soviet river diversion schemes.
Holt, T., et al, *Annals of glaciology*, 1984, Vol.5, p.61-68, 23 refs.
Kelly, P.M., Cherry, B.S.G.
River basins, Sea ice, River flow, Ice conditions, Ocean currents, River diversion, Environmental impact, Climatic changes, USSR, Arctic Ocean.

39-175
Statistical-dynamical model of accumulation on the Greenland ice sheet.
Keen, R.A., *Annals of glaciology*, 1984, Vol.5, p.69-74, 11 refs.
Ice sheets, Glacier alimentation, Precipitation (meteorology), Meteorological charts, Climatic factors, Glacier mass balance, Models, Distribution, Maps, Greenland.

39-176
Sea-ice budget studies of Baffin Bay using a numerical ice model.
Keliher, T.E., et al, *Annals of glaciology*, 1984, Vol.5, p.75-80, 15 refs.
Foley, J.S.
Sea ice, Ice conditions, Ice cover, Ice models, Thermodynamics, Wind factors, Ocean currents, Mathematical models, Synoptic meteorology, Baffin Bay.

39-177
Introduction to a new sea-ice database.
Knight, R.W., *Annals of glaciology*, 1984, Vol.5, p.81-84, 4 refs.
Sea ice distribution, Remote sensing, Data processing.

39-178
Sensitivity of late-glacial and Holocene climates to the combined effects of orbital parameter changes and lower boundary condition changes: "snapshot" simulations with a general circulation model for 18, 9 and 6 ka BP.
Kutzbach, J.E., et al, *Annals of glaciology*, 1984, Vol.5, p.85-87, 16 refs.
Guetter, P.J.
Glaciation, Climatic changes, Paleoclimatology, Ice sheets, Ice conditions, Sea water, Water temperature, Models.

39-179
Late-glacial maximum-Holocene atmospheric and ice-thickness changes from Antarctic ice-core studies.
Lorius, C., et al, *Annals of glaciology*, 1984, Vol.5, p.88-94, Refs. p 93-94.
Raynaud, D., Petit, J.R., Jouzel, J., Merlivat, L.
Ice cores, Ice composition, Paleoclimatology, Climatic changes, Ice cover thickness, Models, Air temperature, Aerosols, Snow accumulation, Isotopic analysis.
A review of Byrd, Vostok and Dome C Antarctic ice-core records indicates significant changes in atmospheric characteristics between the late glacial maximum (LGM) and the Holocene. This data is relevant to general circulation model (GCM) boundary conditions and validation of output results. Reciprocally, GCM data could help to interpret ice-core results and to extend observed high-latitude changes to a larger scale. During the LGM, low troposphere temperatures were colder by about 5 to 7 C and surface temperatures by 8 to 10 C over the Antarctic ice sheet. There are indications that snow accumulation was slightly lower and isotopic data suggests higher relative humidity over the ocean. A large increase in continental dust (up to a factor of 20) and marine aerosols (up to a factor of 5) is observed on the high antarctic plateau, both explained by the increased intensity of the large-scale atmospheric circulation modulated by desert and sea-ice area extension. Ice-core results show large changes in atmospheric CO2 concentrations with LGM values around 200 ppmv and "pre-industrial" values of about 260 ppmv. Finally, determinations of total gas content suggest that central West and East Antarctica were not thicker during the LGM in contrast with higher surface elevations inferred from coastal-ice studies. (Auth.)

39-180
Cross-sectional model for West Antarctica.
McInnes, B.J., et al, *Annals of glaciology*, 1984, Vol.5, p.95-99, 24 refs.
Budd, W.F.
Ice creep, Ice sheets, Ice cover thickness, Glacier mass balance, Rheology, Ice models, Ice deformation, Glacier thickness, Ice mechanics.
The dynamic state of the west antarctic ice sheet has been termed the grand problem of glaciology. An attempt is made to assess it by simulating the observed ice thickness and ice velocities along a cross-section from ice stream B (Ross Sea) to Pine Island Glacier (Pine Island Bay) with a numerical model developed from the one described by Budd and McInnes (1978). A kinematic analysis with topographical and regime data from various sources shows the mass fluxes observed near the grounding line of the Ross Ice Shelf to be of the order expected for steady-state balance. Deformation of the ice accounts for only a small fraction of the observed flow there. Simulations with the Budd/McInnes surging mechanism can approximate the existing ice thickness as a post-surge feature but fail to reproduce the high balance velocities. Both these velocities and the existing ice-thickness profile are simulated successfully as a state of steady sliding, with parameterizations involving the ice thickness above that corresponding to buoyancy and realistically assumed longitudinal strain-rates. A range of results is presented to illustrate the sensitivity of the simulation to changes in various parameters. (Auth.)

39-181
Ice-age climate and continental ice sheets: some experiments with a general circulation model.
Manabe, S., et al, *Annals of glaciology*, 1984, Vol.5, p.100-105.
Broccoli, A.J.
Land ice, Paleoclimatology, Climatic factors, Pleistocene, Ice conditions, Models, Sea water, Water temperature, Ice sheets, Soil water.

39-182
Dynamical heat-flux feedbacks and global climate stability.
Molnar, G., et al, *Annals of glaciology*, 1984, Vol.5, p.106-110, 32 refs.
Wang, W.-C.
Heat flux, Climatic changes, Solar radiation, Thermal radiation, Ice conditions, Solar activity, Heat transfer, Models, Albedo.

39-183
An atmospherically driven sea-ice drift model for the Bering Sea.
Pease, C.H., et al, *Annals of glaciology*, 1984, Vol.5, p.111-114, 9 refs.
Overland, J.E.
Drift, Sea ice, Ice models, Ice floes, Ice cover thickness, Wind factors, Velocity, Bering Sea.

39-184
Reconstruction of the glacial ice covers of Greenland and the Canadian Arctic islands by three-dimensional, perfectly plastic ice-sheet modelling.
Reeh, N., *Annals of glaciology*, 1984, Vol.5, p.115-121, 18 refs.
Paleoclimatology, Ice sheets, Ice models, Ice edge, Ice conditions, Glaciology, Surface properties, Altitude, Greenland, Canada.

39-185
Ablation and heat balance of the Yukikabe snow patch in the Daisetsu mountains, Hokkaido, Japan.
Sato, A., et al, *Annals of glaciology*, 1984, Vol.5, p.122-126, 23 refs.
Takahashi, S., Naruse, R., Wakahama, G.
Snow cover, Seasonal ablation, Snowmelt, Heat balance, Latent heat, Air temperature, Degree days, Solar radiation, Mountains, Analysis (mathematics), Japan—Yukikabe.

39-186
Mean summer temperatures and circulation in a south-west Norwegian mountain area during the Atlantic period, based upon changes of the Alpine pine-forest limit.
Selsing, L., et al, *Annals of glaciology*, 1984, Vol.5, p.127-132, 10 refs.
Wishman, E.
Forest lines, Radioactive age determination, Paleoclimatology, Mountains, Climatic factors, Norway.

39-187
Modeling the ocean in climate studies.
Semtner, A.J., Jr., *Annals of glaciology*, 1984, Vol.5, p.133-140, 28 refs.
Climate, Sea ice distribution, Heat transfer, Sea water, Water temperature, Models.

39-188
Flow behavior of basal ice as related to modeling considerations.
Shoji, H., et al, *Annals of glaciology*, 1984, Vol.5, p.141-148, 40 refs.
Langway, C.C., Jr.
Glacier flow, Ice sheets, Shear flow, Shear stress, Shear strain, Ice modeling, Basal sliding, Ice cores, Ice bottom surface, Velocity.

39-189
Lake sediments as continental delta O-18 records from the glacial/post-glacial transition.
Siegenthaler, U., et al, *Annals of glaciology*, 1984, Vol.5, p.149-152, 13 refs.
Eicher, U., Oeschger, H., Dansgaard, W.
Lacustrine deposits, Glaciation, Climatic changes, Paleoclimatology, Ice cores, Oxygen isotopes, Sediments, Greenland.

39-190
Transient temperature changes due to increasing CO2 using simple models.
Siegenthaler, U., et al, *Annals of glaciology*, 1984, Vol.5, p.153-159, 16 refs.
Oeschger, H.
Ice cores, Temperature variations, Carbon dioxide, Heat capacity, Sea water, Models, Heat balance, Continents.

39-191
Atmospheric CO2 concentration during the last glaciation.
Stauffer, B., et al, *Annals of glaciology*, 1984, Vol.5, p.160-164, 17 refs.
Hofer, H., Oeschger, H., Schwander, J., Siegenthaler, U.
Ice cores, Carbon dioxide, Atmospheric composition, Glaciation, Paleoclimatology, Climatic changes, Glacier ice, Bubbles, Periodic variations.

39-192
Glacier flexure and the position of grounding lines: measurements by tiltmeter on Rutford Ice Stream, Antarctica.
Stephenson, S.N., *Annals of glaciology*, 1984, Vol.5, p.165-169, 14 refs.
Rheology, Glacier thickness, Glacier mass balance, Glacier flow, Glacier beds, Ice solid interface, Remote sensing, Tides, Floating ice, Ice cover thickness.
Two methods were used to locate the grounding line on the Rutford Ice Stream. The first method determined where the glacier was floating in hydrostatic equilibrium, while the second method measured the flexing close to the grounding line due to ocean tides. The ratio of surface elevation to ice thickness of the glacier goes through the hydrostatic equilibrium value 1 to 2 km downstream of where tidal flexing was recorded. This behaviour can be explained if the upward pressure of the sea at the base of the ice is augmented by a vertical shear-stress gradient within the glacier to overcome its weight. Simple elastic-beam theory matches the flexure profile data if a modified elastic modulus and effective thickness are used. Tiltmeters can be used to monitor the position of the grounding line if the geometry of the flexing region can be defined. (Auth.)

39-193
Model simulation of 20 years of northern hemisphere sea-ice fluctuations.
Walsh, J.E., et al, *Annals of glaciology*, 1984, Vol.5, MP 1767, p.170-176, 20 refs.
Hibler, W.D., III, Ross, B.
Sea ice distribution, Ice conditions, Ice models, Drift, Surface temperature, Wind factors, Periodic variations, Snow cover effect, Ice cover thickness, Climatic factors.
A dynamic-thermodynamic sea-ice model (Hibler 1979) is used to simulate northern hemisphere sea ice for a 20-year period, 1961 to 1980. The model is driven by daily atmospheric grids of sea-level pressure (geostrophic wind) and by temperatures derived from the Russian surface temperature data set. Among the modifications to earlier formulations are the inclusion of snow cover and a multilevel ice-thickness distribution in the thermodynamic computations. The time series of the simulated anomalies show relatively large amounts of ice during the early 1960s and middle 1970s, and relatively small amounts during the late 1960s and early 1970s. The fluctuations of ice mass, both in the entire domain and in individual regions, are more persistent than are the fluctuations of ice-covered area. The ice dynamics tend to introduce more high-frequency variability into the regional (and total) amounts of ice mass. The simulated annual ice export from the Arctic basin into the East Greenland Sea varies interannually by factors of 3 to 4.

39-194
Impurities in snow: effects on albedo and snowmelt (review).
Warren, S.G., *Annals of glaciology*, 1984, Vol.5, p.177-179, 20 refs.
Snow impurities, Albedo, Snowmelt, Ice cores, Dust, Volcanic ash, Models, Antarctica—Byrd Station.
Very small (ppm) amounts of soil dust in snow can significantly reduce snow albedo and thereby affect the snow-surface energy budget. Ice cores from Greenland show enhanced dust concentrations in ice from the last glacial maximum, in amounts capable of causing measurable effects on snow albedo. This enhanced dust is probably due in part to the expanded desert areas at that time. Volcanic ash layers visible in the Byrd Station core reduced the snow albedo in West Antarctica when they were on the surface. The ash is unlikely to have had a long-term effect on albedo because of the episodic nature of volcanic eruptions. Very large amounts of dust on snow can inhibit snow-melt by insulating the snow. A debris cover probably slowed the melting of parts of the North American ice sheet during its most recent decay phase. Snow in the Arctic Ocean

is presently suffering large-scale contamination by carbon soot from anthropogenic sources. Preliminary estimates indicate that soot concentrations in Arctic snow are sufficient to reduce snow albedo measurably.

39-195
Ice-sheet modeling.
Weertman, J., et al, *Annals of glaciology*, 1984, Vol.5, p.180-184, 28 refs.
Birchfield, G.E.
Ice sheets, Ice models, Pleistocene, Ice mechanics, Ice volume, Mass balance, Planetary environments, Ice dating, Astrophysics.

39-196
Ice flow leading to the deep core hole at Dye 3, Greenland.
Whillans, I.M., et al, *Annals of glaciology*, 1984, Vol.5, MP 1824, p.185-190, 12 refs.
Jezek, K.C., Drew, A.R., Gundestrup, N.
Ice mechanics, Rheology, Boreholes, Ice bottom surface, Radio echo soundings, Ice cover thickness, Velocity, Greenland.

39-197
Observing polar-ice variability.
Zwally, H.J., *Annals of glaciology*, 1984, Vol.5, p.191-198, 36 refs.
Ice sheets, Sea ice distribution, Remote sensing, Ice conditions, Ice models, Mass balance, Seasonal variations.
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Stable isotope ratios and salinities of ice samples obtained from a submarine ice cliff at Explorers Cove demonstrate that the upper parts of the ice cliff have frozen directly from sea-water and are an underwater expression of permafrost, whereas the lower parts appear to be partially glacial in origin. These results indicate that there may be ice cores in the moraines of Explorers Cove, in which case the coastline of McMurdo Sound is more extensively ice-cored than previously known.

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Ice sheets, Ice water interface, Mass balance, Ice mechanics, Ice shelves, Grounded ice, Antarctica—Ross Ice Shelf.
A time-dependent numerical model has been developed to study the dynamics of a polar ice stream grounded below sea level. The retarding force, or back stress, from the floating Ross Ice Shelf needed to hold the model grounding line in dynamic equilibrium was found to compare closely with retarding force mapped from field data by earlier investigators. This implies that the grounding line of ice stream E is in fact close to dynamic equilibrium, neither advancing nor retreating rapidly, if the ice stream and its catchment area are approximately in mass balance. Sensitivity tests showed that the model ice stream is more sensitive to changes in back stress from the ice shelf than to changes in the accumulation rate. Changes in back stress can be caused by changes in the average thickness of the ice shelf. The model was used to simulate retreat of the ice stream from the edge of the continental shelf in the Ross Sea during the Holocene period of rising sea level. The sea-floor was assumed to be isostatically depressed but to remain rigid during retreat. The effect of the assumed retreat history of the Ross Ice Shelf on the computed timing of grounding-line retreat was investigated by considering several alternative ice shelf histories. (Auth. mod.)

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Glacier surveys, Mountain glaciers, Glacier mass balance, Ice volume, Glacier flow, Ice temperature, Glacier ablation, Glacier alimentation, Distribution, China—Altay Shan.

39-265
Traces of ancient glaciations and their division in the Quaternary at the drainage basin of Halasi River in the Altay Shan of China.
Liu, C., et al, *Journal of glaciology and cryopedology*, Dec. 1983, 5(4), p.39-47, 7 refs., In Chinese with English summary.
Wang, L.
Alpine glaciation, Pleistocene, Subglacial drainage, Moraines, Topographic features, Quaternary deposits, China—Altay Shan.

39-266
Analysis on the relationship between streamflow and precipitation in Altay mountainous region.
Zhou, B., *Journal of glaciology and cryopedology*, Dec. 1983, 5(4), p.49-56, 1 ref., In Chinese with English summary.
Stream flow, Precipitation (meteorology), Snowfall, Mountains, Snow cover distribution, Runoff, Meltwater, Seasonal variations, China—Altay Shan.

39-267
Correlation between tree ring and climatic and glacial variations in the region of Mts. Altay.
Kang, X., *Journal of glaciology and cryopedology*, Dec. 1983, 5(4), p.57-62, 2 refs., In Chinese with English summary.
Glacier oscillation, Climatic changes, Age determination, China—Altay Shan.

39-268
Some advance in the research of the Lanzhou Institute of Glaciology and Cryopedology (1981-1982).
Shi, Y., et al, *Journal of glaciology and cryopedology*, Dec. 1983, 5(4), p.63-66, In Chinese.
Cheng, G.
Glacier surveys, Organizations, Permafrost, Ice surveys, Snow surveys, Frozen ground, China.

39-269
Ancient rock sea in Shennongjia Mountain.
Guo, F., *Journal of glaciology and cryopedology*, Dec. 1983, 5(4), p.67-70, 4 refs., In Chinese with English summary.
Rocks, Climatic changes, Geologic processes, Glaciation, Paleoclimatology, Mountains, China—Shennongjia Mountains.

39-270
Basal moraine hills at Boduizangbu Basin in the southeastern Tibet.
Yang, Y., *Journal of glaciology and cryopedology*, Dec. 1983, 5(4), p.71-74, 1 ref., In Chinese with English summary.
Landforms, Alpine landscapes, Moraines, Glacier ablation, Glaciation, Paleoclimatology, Pleistocene, Tibet.

39-271
Surging glacier in the Nanjiabawa Peak area, Himalayas.
Zhang, W., *Journal of glaciology and cryopedology*, Dec. 1983, 5(4), p.75-76, In Chinese.
Glacier surges, Glacier oscillation, Glacier surveys, Himalaya Mountains.

39-272
Measuring accuracy analysis of the heat flux plates.
Zhou, Y., et al, *Journal of glaciology and cryopedology*, Dec. 1983, 5(4), p.77-88, 5 refs., In Chinese with English summary.
Xiang, Y.
Heat flux, Temperature measurement, Soil physics, Analysis (mathematics), Accuracy.

39-273
Type Glacier-I hot-water ice auger and its application.
Liang, S., *Journal of glaciology and cryopedology*, Dec. 1983, 5(4), p.91-95, 4 refs., In Chinese with English summary.
Glacier surveys, Ice drills, Water temperature, Equipment.

39-274
Proceedings.
International Symposium on River Sedimentation, 2nd, Nanjing, China, Oct. 11-16, 1983, Beijing, China, Water Resources and Electric Power Press, 1983, 1158p., Refs. passim. For selected papers see 39-275 and 39-276.
River flow, Sedimentation, Turbulent flow, Ice jams, Temperature effects, Mathematical models, Meetings.

39-275
Low-temperature effects on flow in sand-bed streams.
Hong, R., et al, International Symposium on River Sedimentation, 2nd, Nanjing, China, Oct. 11-16, 1983. Proceedings, Beijing, China, Water Resources and Electric Power Press, 1983, p.128-138, In Chinese with English summary. 16 refs.
Karim, M.F., Kennedy, J.F.
River flow, Sediment transport, Sands, Bottom sediment, Suspended sediments, Stream flow, Temperature effects.

39-276
Formation of ice jams in the Elbe River—a case study.
Garbrecht, G., et al, International Symposium on River Sedimentation, 2nd, Nanjing, China, Oct. 11-16, 1983. Proceedings, Beijing, China, Water Resources and Electric Power Press, 1983, p.1038-1049.
Fahlbusch, H., Mertens, W.
Ice jams, River ice, Ice formation, Floods, Models, Drift, Ice floes, Germany—Elbe River.

39-277
Freeze crystallization.
Heist, J.A., *Chemical engineering*, May 7, 1979, 86(10), p.72-82, 13 refs.
Freezing, Solutions, Solids, Crystal growth, Freeze thaw tests, Dewatering.

39-278
Freezing and thawing as a technique for improving the dewaterability of aqueous suspensions.
Baskerville, R.C., *Filtration and separation*, Mar.-Apr. 1971, 8(2), p.141-144, 5 refs.
Sludges, Freeze thaw tests, Water treatment, Suspended sediments, Dewatering.

39-279
Sludge dewatering by high-rate freezing at small temperature differences.
Cheng, C.-Y., et al, *Environmental science and technology*, Dec. 1970, 4(12), p.1145-1147, 3 refs.
Updegraff, D.M., Ross, L.W.
Sludges, Waste treatment, Freezing, Heat transfer, Temperature variations, Solids, Time factor, Dewatering.

39-280
Remote sensing as an aid in periglacial research. [Fjärranalys som hjälpmedel i periglacialforskningen],
Svensson, H., *Svensk geografisk årsbok*, 1982, No.58, p.109-125, In Swedish with English summary. 50 refs.
Periglacial processes, Remote sensing, Geomorphology, Permafrost distribution, Airborne equipment, Photography, Polygonal topography, Paleoclimatology, Fossils.

39-281
Odensjön, Skäralid and Klöva Hallar. Attempt at a new interpretation. [Odensjön, Skäralid och Klöva Hallar. Ett nytt tolkningsförsök],
Rapp, A., *Svensk geografisk årsbok*, 1982, No.58, p.131-142, In Swedish with English summary. 28 refs.
Climatic changes, Glaciation, Nivation, Tundra, Permafrost distribution, Ice wedges, Paleoclimatology, Glacial erosion, Sweden.

39-282
Particle concentrations at the South Pole, on meteorological and climatological time scales; is the difference important.
Hogan, A., et al, *Geophysical research letters*, Sept. 1984, 11(9), p.850-853, 32 refs.
Aerosols, Ice composition, Precipitation (meteorology), Glacier ice, Climatic factors, Antarctica—Amundsen-Scott Station.
Sulfur and dust layers in glacial ice cores have been associated with volcanic activity. Particles collected on the South Polar Plateau during January of 1983 show the maximum concentration of sulfur aerosol to arrive at the surface from the lower troposphere at the beginning of a storm, and the maximum dust concentration to arrive from the upper troposphere as the storm weakens. The sulfur and dust particles did not arrive simultaneously on the meteorological time scale, posing a question in regard to the proper interpretation of the climatic aerosol record and the glacio-climatic record. (Auth.)

39-283
Safety and survival on polar expeditions. [Sicherheit und Überleben bei Polarexpeditionen],
Kohnen, H., comp, Berichte zur Polarforschung, Sonderheft No.3, Bremerhaven, Alfred-Wegener-Institut, 1983, 36p. + Addendum 1, July 1984.
Cold weather survival, Safety.
This small booklet covers safety aspects when working on the continent, on the sea or sea ice, and in aircraft operations and survival in these environments when an accident occurs. It discusses such topics as blackout, whiteout, fire, snow blindness, frost bite, wind chill, emergency shelters, traverse procedures, emergency landings on ice, coping with sea ice, accidents at sea, rules for working aboard *Polarstern*, working with helicopters, and, in Addendum No.1, safety when working around fixed wing aircraft.

39-284
Modelling of ice accretion on wires.
Makkonen, L., *Journal of climate and applied meteorology*, June 1984, 23(6), p.929-939, 32 refs.
Ice accretion, Power line icing, Temperature effects, Ice growth, Mathematical models.

39-285
Quantitative estimates of the effect of Lake Michigan on snowfall.
Braham, R.R., Jr., et al, *Journal of climatology and applied meteorology*, June 1984, 23(6), p.940-949, 11 refs.
Dungey, M.J.
Snowfall, Lake effects, Climatology, United States—Michigan, Lake.

39-286
JSE Brabant Island 1983-85. June 1984, 30p.
Cold weather tests, Low temperature research, Clothing, Equipment, Antarctica—Brabant Island.
This is a preliminary report of the expedition summer party which had the dual purposes of making scientific observations in several study areas and testing and evaluating various types of cold weather clothing and equipment. Some data are given on projects in botany, ornithology, mammals (seals), invertebrates, psychology, meteorology, geodetic survey, and geology and geomorphology. Twenty-two categories of clothing and equipment were used and brief evaluations are given. Intentions of the wintering party, which plans to winter over in tents, are listed.

39-287
Vormsund test road. Part 3: Observations and results.
Nordal, R.S., ed, *Norway. Veglaboratoriet. Meddelelser*, Mar. 1984, No.57, 165p., In Norwegian. Refs. passim.
Frost heave, Pavements, Roads, Freeze thaw cycles, Climatic factors, Deformation, Frost penetration, Ground water, Freezing indexes.

39-288
Snow physics, avalanches, mudflows. [Fizika snega, laviny, selі],
Zalikhanov, M.Ch., ed, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, 156p., In Russian. For individual papers see 39-289 through 39-305. Refs. passim.
Avalanches, Snow physics, Slope processes, Measuring instruments, Meltwater, Snow recrystallization, Mudflows, Ice crystals, Flow rate, Crystal defects, Alpine landscapes, Snow cover structure, Acoustic measurements, Ice deformation, Seismic velocity, Wave propagation.

39-289
Ecological approach to snow studies in mountains. [Ekologicheskiĭ podkhod k izucheniiu snega v gorakh],
Kolomyts, E.G., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.3-15, In Russian. 31 refs.
Zalikhanov, M.Ch.
Alpine landscapes, Avalanche formation, Human factors, Snow cover distribution, Ecology, Glaciation, Nivation, Ecosystems, Theories.

39-290
Synoptic-climatic analysis of situations in the El'brus Mountain area. [Sinoptiko-klimaticheskiĭ analiz lavinnykh situatsiĭ v Priel'brus'e],
Vetrov, N.A., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.16-32, In Russian. 2 refs.
Grakovich, V.F., Trutko, T.V.
Alpine landscapes, Meteorological charts, Avalanche formation, Atmospheric circulation, Avalanche forecasting, Synoptic meteorology, Meteorological data, USSR—Caucasus.

39-291
Measuring avalanche velocity. [K voprosu izmereniia skorosti lavin],
Bagov, M.M., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.32-34, In Russian.
Zalikhanov, M.Ch., Duguzhev, Kh.I.
Avalanche mechanics, Avalanche triggering, Wave propagation, Seismic velocity, Acoustic measurement, Measuring instruments, Flow rate, Frozen ground.

39-292
Estimating the degree of damage done by avalanches to slope surfaces and valleys. [K voprosu otsenki stepeni porazheniia poverkhnosti sklonov i dolin lavinami],
Kozhaev, D.A., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.35-37, In Russian. 5 refs.
Valleys, Avalanche mechanics, Slope processes, Avalanche erosion, Avalanche deposits, Alpine landscapes.

39-293
Lateral boundaries of avalanche snow deposits in the El'brus Mountain area. [O bokovykh granitsakh snezhnykh otlozheniĭ lavin v Priel'brus'e],
Zolotarev, E.A., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.37-42, In Russian. 6 refs.
Kirpichenkov, S.IA.
Avalanche mechanics, Avalanche deposits, Avalanche formation, Avalanche triggering.

39-294
Structural and density characteristics of slab avalanches. [O strukturno-plotnostnykh kharakteristikakh "snezhnykh dosok"],
Bolov, V.R., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.42-44, In Russian. 7 refs.
Snow slides, Avalanche formation, Avalanche mechanics, Snow cover structure, Metamorphism (snow), Classifications.

39-295
Method of calculating sublimational recrystallization of snow. [Ob odnom metode rascheta velichiny sublimatsionnoĭ perekristallizatsii snega],
Kolomyts, E.G., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.45-55, In Russian. 6 refs.
Snow cover structure, Snow recrystallization, Ice deformation, Ice crystals, Crystal defects, Snow physics, Ice physics, Tables, Charts.

39-296
Wind effect on vertical migration of water vapor in snow cover and physico-mechanical properties of snow. [Vliianie vetra na vertikal'nuiu migratsiiu vodianykh parov v snezhnom pokrove i fiziko-mekhanicheskie svoĭstva snega],
Dziuba, V.V., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.55-65, In Russian. 19 refs.
Wind pressure, Snow cover structure, Snow deformation, Avalanche formation, Snow density, Vapor transfer, Water vapor, Wind velocity.

39-297
Theoretical multivariate modeling of high-mountain ecosystems. [Teoretiko-mnozhestvennoe modelirovanie vysokogornykh ekosistem],
Kolomyts, E.G., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.65-83, In Russian. 8 refs.
Alpine tundra, Alpine landscapes, Ecosystems, Meadow soils, Human factors, Mathematical models.

39-298
Recent climatic changes in the Caucasus. [Sovremennye izmeneniia klimata na Bol'shom Kavkaze],
Surova, N.A., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.83-98, In Russian. 41 refs.
Alpine landscapes, Climatic changes, Synoptic meteorology, Slope orientation, Glacier oscillation, Air temperature, Atmospheric circulation, Precipitation (meteorology).

39-299
Forthcoming natural climatic changes in the El'brus Mountain area. [Predstoiashchie estestvennye izmeneniia klimata Priel'brus'ia],
Surova, N.A., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.98-110, In Russian. 19 refs.
Alpine landscapes, Precipitation (meteorology), Snow accumulation, Avalanche formation, Avalanche forecasting, Climatic changes, Meteorological data, Meteorological charts.

39-300
Analysis of snow accumulation and avalanche activity in the Arkhyzskiy region (western Caucasus) during the last 47 years (1932-1979). [Analiz uslovil snezhnosti i lavinnoĭ deiatel'nosti Arkhyzskogo raĭona (Zapadnyĭ Kavkaz) za poslednie 47 let (1932-1979 gg.)],
Volodicheva, N.A., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.110-117, In Russian. 2 refs.
Olejnikov, A.D.
Alpine landscapes, Snow accumulation, Snow cover distribution, Avalanche formation, Tables, Charts.

39-301
Comparison of the radiation balance and its components beneath forest canopy and in open localities of the El'brus Mountain area. [Sravnitel'naia kharakteristika radiatsionnogo balansa i ego sostavliaiushchikh pod pologom lesa i na otkrytoĭ mestnosti v raĭone El'brusa],
Samukashvili, R.D., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.117-122, In Russian. 1 ref.
Forest land, Alpine landscapes, Forest canopy, Forest soils, Radiation balance, Plant ecology, Plant physiology, Photosynthesis.

39-302
Altitudinal variations of long-period mean monthly albedo values in the Caucasus. [Vysotnoe izmenenie mnogoletnikh srednikh mesiachnykh al'bedo v gornykh raĭonakh Kavkaza],
Samukashvili, R.D., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 198? Vol.52, p.123-128, In Russian. 2 refs.
Snow line, Alpine landscapes, Snow cover distribution, Nivation, Albedo, Radiation balance.

39-303
Glacial component in the total discharge of the Kayartasu River for the 1980 ablation period. [Lednikovaia sostavliaiushchaia v summarnom stoke r. Kayartasu za abliatsionnyĭ sezon 1980 g.],
Samukashvili, R.D., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.128-132, In Russian. 3 refs.
Glacial hydrology, Glacial rivers, Glacier ablation, Runoff.

39-304
Problem of establishing a data bank for glaciers. [Po voprosu sozdaniia fonda dannykh po lednikam],
Grakovich, V.F., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.133-142, In Russian. 6 refs.
Zalikhanov, M.Ch.
Glacier surveys, Data processing, Computer applications, Glaciation, Classifications, Research projects, Tables, Mountain glaciers, Charts.

39-305
Conditions for mudflow formation in the Tyrnyauza River area in the summer of 1980. [Usloviia formirovaniia selevykh potokov v raĭone r. Tyrnyauza letom 1980 g.],
Moskalev, F.I., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.52, p.142-149, In Russian.
[Akovleva, V.L., Kalov, Kh.M.
Alpine landscapes, Slope processes, Mudflows, Meltwater, Rain, Runoff forecasting, Countermeasures, Meteorological data.

39-306
Iceberg quantities, shapes, and sizes in western Ross and D'Urville Seas.
Keys, J.R., *Antarctic journal of the United States*, 1983, 18(5), p.125-127, 13 refs.
Icebergs, Sea ice distribution, Radar tracking, Antarctica—Ross Sea.
Iceberg counts were made in the southern ocean and western Ross Sea during the cruise of *Glacier* from Christchurch to McMurdo in Jan. 1983 and the return cruise in Feb., and from the yacht *Dick Smith Explorer* heading south from Hobart, Australia, in the southern ocean and D'Urville Sea during Jan. 1982. Radar was used as the basic tool for estimating iceberg quantities, which vary widely in space and time. It was concluded that the southwest and west portions of Ross Sea contain more icebergs on average than elsewhere in the Ross Sea. Irregular shaped and rounded icebergs (mainly those that have overturned) are more numerous collectively than non-overturned icebergs in the southern ocean. However, within the Ross Sea, non-overturned icebergs may be more numerous. Also, crevassed tabularform icebergs are more numerous in the D'Urville Sea than in the Ross Sea. The smallest icebergs (less than 200 m long) seemed to be the most common in both seas. The maximum draft of icebergs in the Ross Sea is probably greater than 300 m.

39-307
Elemental compositions and concentrations of microspherules in snow and pack ice from the Weddell Sea.
Kumai, M., et al, *Antarctic journal of the United States*, 1983, 18(5), MP 1777, p.128-131, 7 refs.
Ackley, S.F., Clarke, D.B.
Pack ice, Snow crystals, Microelement content, Particles, Antarctica—Weddell Sea.
This paper presents the results of an investigation of microspherules found in snow and pack ice from the Weddell Sea, Antarctica, collected during the U.S.-U.S.S.R. Weddell Polynya Expedition, 1981. Elemental composition, size, and concentration of microspherules were determined using a scanning electron microscope (SEM) and energy dispersive X-ray analysis (EDXA). Typical textures of microspherules are shown in this report and compared with those found in snow and ice-fog crystals sampled from the Northern Hemisphere. In this study, 23 microspherules were found in the snow sample from the Weddell Sea and 6 from the snow-ice sample. The concentration of microspherules in the snow samples is calculated to be approx 0.001 percent, three orders of magnitude smaller than that of the Northern Hemisphere. This indicates that the concentration of microspherules in the Antarctic may be three orders of magnitude smaller than the concentration found in the Northern Hemisphere. Silicon- and titanium-rich microspherules from the Weddell Sea were found in fly ash of terrestrial origin. The iron rich microspherules were tentatively identified to be of extraterrestrial origin.

39-308
Influence of light on development and growth of sea-ice microbial communities in McMurdo Sound.
Sullivan, C.W., et al, *Antarctic journal of the United States*, 1983, 18(5), p.177-179, 10 refs.
Palmisano, A.C., Kottmeier, S., Grossi, S.M., Moe, R., Taylor, G.T.
Algae, Sea ice, Cryobiology, Antarctica—McMurdo Sound.
A large scale light attenuation experiment was conducted on the annual sea ice of McMurdo Sound during a three month period from October until January, 1983. The purpose of the experiment was to determine the influence of light on development and growth rate of the SIMCO and in turn to determine the influence of SIMCO on the underice light field (downwelling irradiance and spectral composition). Five pairs of quadrats 100 sq m each were cleared of all snow or were covered with snow to a depth of 5, 10, 25 or 100 cm in order to vary underice irradiance. Microbial growth, accumulation and metabolic rate estimates were made of the SIMCO which developed in brine channels of the congelation ice and interstitial waters or on ice crystal surfaces of the underwater platelet ice layer. Downwelling irradiance and spectral composition of light at the sea ice surface, under 2 m of congelation ice and under congelation ice plus platelet ice containing the SIMCO was determined by SCUBA divers using a spectroradiometer. The studies demonstrate that SIMCO's are not only significant sources of primary and secondary production, but that they also influence the physical environment of polar ecosystems in important ways.

39-309
Studies of ice-algal communities in the Weddell Sea.
Garrison, D.L., et al, *Antarctic journal of the United States*, 1983, 18(5), p.179-181, 12 refs.
Buck, K.R., Silver, M.W.
Algae, Frazil ice, Sea ice, Cryobiology, Antarctica—Weddell Sea.
This report summarizes the results of population studies, indicating a close coupling between algal assemblages in ice and water in the Weddell Sea and suggesting the source of ice-algal populations. Many algal species were common to both ice and water, but none were exclusively associated with ice. *Phaeocystis pouchetii* and several diatom species were the numerically important algae. Observations on newly forming ice suggested that algal populations in the samples were initially entrapped but also concentrated during frazil ice formation. It is concluded that planktonic algae are regularly incorporated into sea ice, that they overwinter in ice, and that they are released into the water column during ice melting in the spring and summer over a prolonged period, thus explaining the marked similarity between ice and water column assemblages in this region.

39-310
Relative abundance of diatoms in Weddell Sea pack ice.
Clarke, D.B., et al, *Antarctic journal of the United States*, 1983, 18(5), MP 1786, p.181-182, 12 refs.
Ackley, S.F.
Algae, Pack ice, Frazil ice, Cryobiology, Antarctica—Weddell Sea.
Diatoms were found throughout the length of sea ice cores (average length, 75 cm) taken from the Weddell Sea during the Oct.-Nov. 1981 joint U.S.-U.S.S.R. study. As in previous studies it was found that the pennate forms were dominant. *Chaetoceros dichaeta* Ehrenberg was the only centric species which was "abundant" in the samples, and it has not previously been reported as abundant. Of the pennate species found in abundance, three have been found in abundance by other authors. These are *Nitzschia closterium* (Ehrenberg) W. Smith, *Nitzschia cylindrus* (Grunow) Hasle, and *Nitzschia subcurvata* Hasle. Also found to be numerically significant in the samples were *Nitzschia prolongatoides* Hasle, *Nitzschia turgiduloides* Hasle, *Tropidoneis glacialis* Heiden, and an unidentified *Navicula* species. The table lists the dominant species in each sample and their relative abundances. Five of these species have not previously been found in abundance in antarctic sea ice. Possible reasons for the variable species compositions in samples are discussed.

39-311
Oceanography of the antarctic marginal ice zone.
Smith, W.O., et al, *Antarctic journal of the United States*, 1983, 18(5), p.190-192, 1 refs.
Pack ice, Algae, Ice edge, Plankton, Cryobiology, Antarctica—McMurdo Sound.
Studies of the causes and spatial extent of ice-edge phytoplankton blooms conducted onboard the *Glacier* north of McMurdo Sound are summarized. Water samples were collected for measurements of salinity, nutrients, chlorophyll *a*, particulate carbon, nitrogen, and silicon, phytoplankton taxonomy, primary productivity, nutrient uptake rates, and conductivity/temperature profiles. Chlorophyll temperature profiles indicate that, in regions of melting pack ice, a stable surface layer was created which then became the site of active phytoplankton growth and accumulation.

39-312
Cold regions engineering in Norway.
Flaate, K., *Norway. Veglaboratoriet. Meddelelser*, Sep. 1983, No.55, p.5-6.
Cold weather construction, Winter maintenance, Road icing, Frost heave, Engineering, Pipeline freezing, Frozen ground strength, Climatic factors, Road maintenance, Thermal insulation, Norway.

39-313
Avalanche hazard evaluation, accuracy and use.
Norem, H., *Norway. Veglaboratoriet. Meddelelser*, Sep. 1983, No.55, p.7-8, 2 refs.
Roads, Avalanche formation, Avalanche forecasting, Accidents, Trafficability, Weather stations.

39-314
Increasing traffic safety and regularity in snow-storm periods.
Norem, H., *Norway. Veglaboratoriet. Meddelelser*, Sep. 1983, No.55, p.9-11, 1 ref.
Snowstorms, Road maintenance, Winter maintenance, Safety, Snow removal, Trafficability, Drifting, Climatic factors, Design.

39-315
Prediction of frost heave of roads.
Saetersdal, R., *Norway. Veglaboratoriet. Meddelelser*, Sep. 1983, No.55, p.27-30, 11 refs.
Frost heave, Frost forecasting, Roads, Thermodynamics, Soil freezing, Frost resistance, Heat transfer, Soil water migration, Permeability.

39-316
Low cost road tunnel developments in Norway.
Grönhaug, A., *Norway. Veglaboratoriet. Meddelelser*, Sep. 1983, No.55, p.31-37, 9 refs.
Tunneling (excavation), Frost protection, Roads, Frost penetration, Countermeasures, Trafficability, Design, Cost analysis, Norway.

39-317
Natural salt extracts and their value for prospecting in permafrost areas. [Prirodnye solevye vytiazhki i ikh poiskovoe znachenie v zone razvitiia mnogoletnei merzloty],
Kokin, A.V., *Akademiia nauk SSSR. Sibirskoe otdelenie. Geologiia i geofizika*, June 1984, No.6, p.37-44, In Russian with English summary. 9 refs.
Mining, Permafrost distribution, Exploration, Ground water, Brines, Permafrost hydrology, Naleds, Water chemistry, Geochemistry, Continuous permafrost.

39-318
"Ploughing blocks" in Tien Shan highlands. ["Plyvushchie" glyby v vysokogor'e Tian'-Shania],
Tarakanov, A.G., *Geomorfologiia*, July-Sep. 1984, No.3, p.88-95, In Russian with English summary. 10 refs.
Solifluction, Slope processes, Active layer, Freeze thaw cycles, Alpine landscapes, Permafrost distribution.

39-319
Improving the thermal regime of frozen peat by adding mineral soil. [Uluchshenie teplovogo rezhima torfiano-merzlotnykh pochv vneseniem dobavok mineral'nogo grunta],
Korekovtsev, A.S., *Gidrotekhnika i melioratsiia*, Apr. 1984, No.4, p.67-69, In Russian. 2 refs.
Active layer, Land reclamation, Paludification, Organic soils, Peat, Thermal regime, Cryogenic soils, Freeze thaw cycles.

39-320
Mechanics of ice failure depending on temperature and the pace of loading. [Mekhanika razrusheniia l'da v zavistimosti ot temperatury i skorosti nagruzheniia],
Epifanov, V.P., *Akademiia nauk SSSR. Izvestiia. Mekhanika tverdogo tela*, Mar.-Apr. 1984, No.2, p.188-196, In Russian. 21 refs.
Artificial ice, Distilled water, Ice strength, Ice physics, Mechanical tests, Laboratory techniques, Loads (forces), Low temperature tests.

39-321
Clathrate formation in the systems water-Quaternary ammonium-base salts. XV. Iodide systems at normal and high pressures. [Klatratoobrazovanie v sistemakh voda-soli chetvertichnykh ammonievykh osnovanii. XV. Iodidnye sistemy pri normal'nom i povyshennom davlenii],
Diadin, IU.A., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia. Seriia khimicheskikh nauk*, Jan. 1984, 2(1), p.13-18, In Russian with English summary. 17 refs.
Clathrates, Brines, Hydrates, Phase transformations, Ice melting, Melting points.

39-322
Primary production in the Bratsk reservoir. Part 1. Chlorophyll *a* content. [Pervichnaia produktsiia v Bratskom vodokhranilishche. Soobshchenie 1. Soderzhanie khlorofilla *a*],
Pautova, V.N., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia. Seriia biologicheskikh nauk*, Apr. 1984, 6(1), p.23-30, In Russian with English summary. 3 refs.
Izmest'eva, L.R.
Geothermy, Subglacial observations, Solar radiation, Algae, Chlorophylls, Plant physiology, Permafrost beneath lakes, Icebound lakes, Ice conditions.

39-323
Approximate solutions to the problem of radiant-conductive heat transfer. [Priblizhennoe reshenie zadachi radiatsionno-konduktivnogo teploobmena],
Aksenov, B.G., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia. Seriia tekhnicheskikh nauk*, Mar. 1984, 4(1), p.18-20, In Russian. 4 refs.
Danielian, IU.S., Rubtsov, N.A.
Stefan problem, Ice (construction material), Thermal regime, Radiant heating, Conduction.

39-324
Thermophysical properties of natural gas hydrates and the quartz sand saturated with them. [Teplofizicheskie svoĭstva gidratov prirodnogo gaza i nasyshchennogo imi kvartsevogo peska],
Groĭsman, A.G., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia. Seriia tekhnicheskikh nauk*, Mar. 1984, 4(1), p.26-30, In Russian. 7 refs.
Nikitina, L.M.
Natural gas, Hydrates, Clathrates, Thermal properties, Gas pipelines, Transportation, Experimentation, *Equipment, Laboratory techniques.*

39-325
Observations of volcanic tremor at Mount St. Helens volcano.
Fehler, M., *Journal of geophysical research*, Apr. 10, 1983, 88(B4), MP 1770, p.3476-3484, Comment by M.G. Ferrick and W.F. St. Lawrence. Ibid., July 10, 1984, 89(B7), p.6349-6350. 37 refs.
Ferrick, M.G., St. Lawrence, W.F.
Volcanoes, Elastic waves, Spectra, Seismology, Wave propagation, Soil mechanics, Fluid dynamics, Mountains, Theories, United States—Washington—Mount Saint Helens.

39-326
Reflectance spectroscopy: quantitative analysis techniques for remote sensing applications.
Clark, R.N., et al, *Journal of geophysical research*, July 10, 1984, 89(B7), p.6329-6340, 33 refs.
Roush, T.L.
Remote sensing, Frost, Reflection, Ice spectroscopy, Grain size, Wave propagation, Analysis (mathematics).

39-327
Uniaxial compressive strength of frozen silt under constant deformation rates.
Zhu, Y., et al, *Cold regions science and technology*, June 1984, 9(1), MP 1773, p.3-15, 8 refs.
Carbee, D.L.
Frozen ground strength, Stress strain diagrams, Compressive properties, Ground ice, Ice crystal structure, Tests, Strains, Velocity, Soil creep, Rheology, Temperature variations, Density (mass/volume).
Uniaxial compressive strength tests were conducted on remolded, saturated Fairbanks frozen silt under various constant machine speeds, temperatures and dry densities. Test results show that the peak strength of frozen silt is not sensitive to dry density (or water content) at 2 C, especially at relatively high strain rates, but is very sensitive to temperature and applied strain rate. However, the failure strain is not sensitive to temperature and strain rate within a wide range of strain, rate, but is very sensitive to dry density. It has been found that the initial yield strength consistently increases with decreasing dry unit weight. The initial yield strain is almost independent of dry density and temperature, but varies with strain rate. The initial tangent modulus of frozen silt is found to be nearly independent of strain rate, but the 50% strength modulus is closely related to strain rate. The test results indicate that there is a definite relationship between the two moduli.

39-328
Investigation of the failure envelope of granular/discontinuous-columnar sea ice.
Timco, G.W., et al, *Cold regions science and technology*, June 1984, 9(1), p.17-27, 12 refs.
Frederking, R.M.W.
Ice physics, Ice crystal structure, Sea ice, Compressive properties, Strains, Loads (forces), Analysis (mathematics), Tests.

39-329
Field dielectric measurements of frozen silt using VHF pulses.
Arcone, S.A., et al, *Cold regions science and technology*, June 1984, 9(1), MP 1774, p.29-37, 16 refs.
Delaney, A.J.
Frozen ground physics, Dielectric properties, Radio waves, Permafrost physics, Ground ice, Tunnels, Wave propagation, Transmission, Ice wedges, Tests.

39-330
Dielectric measurements of frozen silt using time domain reflectometry.
Delaney, A.J., et al, *Cold regions science and technology*, June 1984, 9(1), MP 1775, p.39-46.
Arcone, S.A.
Frozen ground physics, Dielectric properties, Ground ice, Reflection, Water content, Temperature effects, Measuring instruments.

39-331
Development of a uniaxial ice tensile specimen for low temperature testing.
Cuda, V., Jr., et al, *Cold regions science and technology*, June 1984, 9(1), p.47-52, 19 refs.
Ash, R.L.
Ice physics, Low temperature tests, Tensile properties, Melting points, Ice sampling.

39-332
Electromagnetic properties of sea ice.
Morey, R.M., et al, *Cold regions science and technology*, June 1984, 9(1), MP 1776, p.53-75, For another version see 38-4472. 27 refs.
Kovacs, A., Cox, G.F.N.
Ice electrical properties, Sea ice, Electromagnetic properties, Ice spectroscopy, Ice crystal structure, Microstructure, Brines, Analysis (mathematics), Dielectric properties.
Investigations of the in situ complex dielectric constant of sea ice were made using time-domain spectroscopy. It was found that (1) for sea ice with a preferred horizontal c-axis alignment, the anisotropy or polarizing properties of of the ice increased with depth, (2) brine inclusion conductivity increased with decreasing temperature down to about -8 C, at which point the conductivity decreased with decreasing temperature, (3) the DC conductivity of sea ice increased with increasing brine volume, (4) the real part of the complex dielectric constant is strongly dependent upon brine volume but less dependent upon the brine inclusion orientation, (5) the imaginary part of the complex dielectric constant was strongly dependent upon brine inclusion orientation but much less dependent upon brine volume.

39-333
Euromech Colloquium 172: Mechanics of Glaciers, Interlaken, *19-23* September, *1983*.
Hutter, K., et al, *Cold regions science and technology*, June 1984, 9(1), p.77-86.
Morland, L.W.
Glacier flow, Glacier oscillation, Avalanches, Snow physics, Glacier surveys, Meetings, Basal sliding.

39-334
Single integral representations in ice mechanics.
Williams, H.T., *Cold regions science and technology*, July 1984, 9(2), p.89-95, 5 refs.
Ice mechanics, Ice creep, Viscoelasticity, Loads (forces), Ice strength, Compressive properties, Stresses, Strain tests, Analysis (mathematics).

39-335
Study of the creep effect upon the response of a pressure sensor embedded in an ice sheet.
Hamza, H., et al, *Cold regions science and technology*, July 1984, 9(2), p.97-107, 27 refs.
Blanchet, D.
Ice creep, Loads (forces), Ice sheets, Analysis (mathematics), Time factor, Measuring instruments, Ice elasticity, Viscoelasticity.

39-336
Use of microwave FMCW radar in snow and avalanche research.
Gubler, H., et al, *Cold regions science and technology*, July 1984, 9(2), p.109-119, 11 refs.
Hiller, M.
Avalanche mechanics, Microwaves, Snow physics, Radar echoes, Backscattering, Electromagnetic prospecting, Analysis (mathematics).

39-337
Measuring particle size and snowfall intensity in drifting snow.
Schmidt, R.A., *Cold regions science and technology*, July 1984, 9(2), p.121-129, 12 refs.
Snowfall, Blowing snow, Particle size distribution, Precipitation (meteorology), Wind factors, Electronic equipment.

39-338
Comparison of snow drifting measurements at an alpine ridge crest.
Schmidt, R.A., et al, *Cold regions science and technology*, July 1984, 9(2), p.131-141, 11 refs.
Meister, R., Gubler, H.
Snowdrifts, Mass transfer, Blowing snow, Electronic equipment, Precipitation gages, Mountains, Measuring instruments.

39-339
Thermodynamic model of creep at constant stress and constant strain rate.
Fish, A.M., *Cold regions science and technology*, July 1984, 9(2), MP 1771, p.143-161, For another source see 38-4470. Refs. p.159-161.
Rheology, Thermodynamics, Frozen ground mechanics, Stress strain diagrams, Soil creep, Viscous flow, Mathematical models, Tests, Loads (forces).
A thermodynamic model has been developed that describes the entire creep process, including primary, secondary, and tertiary creep, and failure for both constant stress (CS) tests and constant strain rate (CSR) tests, in the form of a unified constitutive equation and unified failure criteria. Deformation and failure are considered as a single thermoactivated process in which the dominant role belongs to the change of entropy. Families of creep curves, obtained from uniaxial compression CS and CSR tests of frozen soil, respectively (both presented in dimensionless coordinates), are plotted as straight lines and are superposed, confirming the unity of the deformation and failure process and the validity of the model. A method is developed for determining the parameters of the model, so that creep deformation and the stress-strain relationship of ductile materials such as soils can be predicted based upon information obtained from either type of test.

39-340
Computer simulation of iceberg instability.
Bass, D.W., et al, *Cold regions science and technology*, July 1984, 9(2), p.163-169, 9 refs.
Peters, G.R.
Icebergs, Ice mechanics, Ice loads, Ice scoring, Offshore structures, Ice solid interface, Ice melting, Stability, Computer programs, Drift, Ice pressure, Ocean bottom.

39-341
Iceberg temperatures in the North Atlantic—theoretical and measured.
Diemand, D., *Cold regions science and technology*, July 1984, 9(2), p.171-178, 19 refs.
Icebergs, Ice temperature, Thermal regime, Offshore structures, Ice physics, Ice mechanics, Glacier ice, Oceanography.

39-342
Applications of Anno's modeling conditions to outdoor modeling of snowdrifts.
Anno, Y., *Cold regions science and technology*, July 1984, 9(2), p.179-181, 7 refs.
Snowdrifts, Models, Wind velocity, Turbulent flow, Surface roughness, Snow fences.

39-343
Method of detecting voids in rubbled ic...
Tucker, W.B., et al, *Cold regions science and technology*, July 1984, 9(2), MP 1772, p.183-188, 9 refs.
Rand, J.H., Govoni, J.W.
Pressure ridges, Ice jams, Ice detection, Ice pileup, Surface roughness, Porosity.

39-344
Clathrate formation in the system water-1.4-dioxane at atmospheric pressure. [Klatratoobrazovanie v sisteme voda-1.4-dioksan pri atmosfernom davleniĭ],
Diadin, IU.A., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia. Seriia khimicheskikh nauk*, May 1984, 8(3), p.67-73, In Russian with English summary. 21 refs.
Bondariuk, I.V., Ryzhikova, G.L., Aladko, E.IA., Zelenin, IU.M.
Hydrates, Clathrates, Ice composition, Phase transformations, Ice melting.

39-345
Clathrate formation in the system water-1.4-dioxane at pressures up to 10 kbar. [Klatratoobrazovanie v sisteme voda-1.4-dioksan pri davleniiakh do 10 kbar],
Zelenin, IU.M., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia. Seriia khimicheskikh nauk*, May 298, 8(3), p.73-78, In Russian with English summary. 14 refs.
Diadin, IU.A., Ryzhikova, G.L., Aladko, E.IA.
Hydrates, Clathrates, Ice composition, Phase transformations, Ice melting.

39-346
Clathrate formation in the systems water-quaternary ammonium salts. XVII. Binary aqueous systems with tetra-n-butyl ammonium acetate, propionate and n-caproate. [Klatratoobrazovanie v sistemak voda-soli chetvertichnykh ammonievykh osnovaniĭ. XVII. Binarnye vodnye sistemy s atsetatom, propionatom i n-Kapronatom tetra-n-butilammoniia],
Diadin, IU.A., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia. Seriia khimicheskikh nauk*, May 1984, 8(3), p.79-84, In Russian with English summary. 22 refs.
Gaponenko, L.A., Aladko, L.S.
Clathrates, Brines, Hydrates, Phase transformations, Ice formation.

39-347
Findings of strongly mineralized ice wedges. [O nakhodkakh sil'nomineralizovannykh povtorno-zhil'nykh l'dov],
Vasil'chuk, IU.K., et al, *Akademiia nauk SSSR. Izvestiia. Seriia geologicheskaia*, Aug. 1984, No.8, p.129-134, In Russian. 4 refs.
Trofimov, V.T.
Permafrost structure, Ice wedges, Ice formation, Ice veins, Ice sampling, Ice composition, Impurities, Permafrost origin.

39-348
Using an experimental automatic data-processing system for satellite surveying of forests. [Ispol'zovanie eksperimental'noĭ avtomatizirovannoĭ sistemy obrabotki aerokosmicheskoĭ informatsii o lesakh],
El'man, R.I., et al, *Lesnoe khoziaĭstvo*, 1984, No.6, p.53-55, In Russian.
Kuzenkov, L.A., Bodanskiĭ, E.D.
Forest land, Forestry, Spaceborne photography, Photointerpretation, Taiga, USSR—Yakutia.

39-349
Estimating the fitness of conifer seedlings for the revegetation of taiga pine forests. [Otsenka prigodnosti khvoĭnogo podrosta dlia vosstanovleniia taezhnykh elovykh lesov],
Kharin, O.A., et al, *Lesnoe khoziaĭstvo*, 1984, No.6, p.56-58, In Russian. 13 refs.
Tepliakov, V.K.
Taiga, Forestry, Revegetation, Cryogenic soils.

39-350
Natural revegetation of pine on felled and burned-out areas of eastern Transbaikal forests. [Estestvennoe vozobnovlenie sosny na vyrubkakh i gariakh Vostochnogo Zabaĭkal'ia],
Bondar', P.A., *Lesnoe khoziaĭstvo*, 1984, No.5, p.24-26, In Russian. 10 refs.
Forest soils, Forest fires, Revegetation, Forestry, Cryogenic soils.

39-351
Mathematical model of hydrate formation in the flow of moist gas in tubes.
Biliushov, V.M., *Journal of engineering physics*, Jan. 1984 (Pub. July 84), 46(1), p.46-52, Translated from Inzhenerno-fizicheskiĭ zhurnal. 15 refs.
Hydrates, Natural gas, Gas pipelines, Water vapor, Vapor transfer, Cooling rate, Flow rate.

39-352
Duration of the freezing of bodies with variable temperature of the medium.
Koval'kov, V.P., *Journal of engineering physics*, Jan. 1984 (Pub. July 84), 46(1), p.78-84, Translated from Inzhenerno-fizicheskiĭ zhurnal. 6 refs.
Stefan problem, Solids, Cooling rate, Heat transfer, Phase transformations, Frost action, Mathematical models.

39-353
Melting of ice on 500 kV overhead power lines. [Plavka gololeda na vozdushnykh liniiakh 500 kv],
Gorbunov, A.M., et al, *Elektricheskie stantsii*, Apr. 1984, No.4, p.44-45, In Russian. 2 refs.
Pavlov, V.I., Sibirtsev, V.A.
Ice melting, Power line icing, Ice loads, Ice accretion, Hoarfrost, Glaze, Countermeasures.

39-354
Interpretation of satellite photographs in studying physical and geological processes. [Deshifrirovanie kosmofotosnimkov dlia izucheniia fiziko-geologicheskikh protsessov],
Revzon, A.L., et al, *Avtomobil'nye dorogi*, May 1984, No.5, p.15-17, In Russian. 3 refs.
IUrovskiĭ, B.L., Luk'ianov, A.V., Tomanov, N.I.
Spaceborne photography, Engineering geology, Permafrost distribution, Thermokarst, Slope processes, Photointerpretation.

39-355
Frost resistance of polymer-treated concretes. [Morozostoĭkost' obrabotannogo polimerom betona],
Kapkin, M.M., et al, *Beton i zhelezobeton*, June 1984, No.6, p.11-12, In Russian. 4 refs.
Maksimov, IU.V., Volkov, IU.S., Granovskiĭ, IU.L., Sheĭnfel'd, N.P.
Concrete structures, Frost resistance, Waterproofing, Polymers, Saturation, Hydraulic structures.

39-356
Design of pile foundations built on permafrost. [Raschet svaĭnykh fundamentov, vozvodimykh na vechnomerzlykh gruntakh],
Milovanov, A.F., et al, *Beton i zhelezobeton*, June 1984, No.6, p.20-21, In Russian. 3 refs.
Samoĭlenko, V.N., Molochnikov, A.D., Samuel'son, M.V.
Concrete structures, Foundations, Piles, Permafrost beneath structures, Permafrost control.

39-357
Attenuation of radiation at a wavelength of 0.96 mm in snow.
Babkin, IU.S., et al, *Radio engineering and electronic physics*, 1970 (Pub. Sep. 71), 15(12), p.2171-2174, For Russian original see 27-421. 13 refs.
Iskhakov, I.A., Sokolov, A.V., Stronganov, L.I., Sukhonin, E.V.
Snow physics, Snowfall, Radio waves, Attenuation.

39-358
Attenuation of visible and infrared radiation in rain and snow.
Sokolov, A.V., *Radio engineering and electronic physics*, 1970 (Pub. Sep. 71), 15(12), p.2175-2178, 14 refs. For Russian original see 27-422.
Snowfall, Rain, Radio waves, Attenuation, Infrared radiation.

39-359
Optimum form of pulses in radar sounding of sea ice.
Finkel'shteĭn, M.I., *Radio engineering and electronic physics*, 1970 (Pub. Sep. 71), 15(12), p.2179-2182, 5 refs. For Russian original see 27-423.
Ice cover thickness, Sea ice distribution, Ice physics, Radar echoes, Models.

39-360
MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 3. Modeling the marginal ice zone.
Hibler, W.D., III, ed, *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1984, SR 84-07, 99p., ADA-145 351, Discussions, p.95-98. Refs. passim. For individual papers see 39-361 through 39-374.
Ice models, Ice mechanics, Ice edge, Sea ice distribution, Ice water interface, Ice air interface, Wind factors, Ice conditions, Ocean currents, Rheology.

39-361
Large-scale ice/ocean model for the marginal ice zone.
Hibler, W.D., III, et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Apr. 1984, No.84-07, MP 1778, MIZEX bulletin. 3. Modeling the marginal ice zone, p.1-7, ADA-145 351, 14 refs.
Bryan, K.
Ice mechanics, Ice water interface, Sea ice distribution, Ocean currents, Drift, Ice models, Seasonal variations, Water temperature, Salinity, Wind factors, Velocity.

39-362
East Greenland Sea ice variability in large-scale model simulations.
Walsh, J.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Apr. 1984, No.84-07, MP 1779, MIZEX bulletin. 3. Modeling the marginal ice zone, p.9-14, ADA-145 351, 11 refs.
Hibler, W.D., III.
Ice mechanics, Sea ice, Ice models, Thermodynamics, Ice conditions, Drift, Ice cover thickness, Wind factors, Greenland Sea.

39-363
On the decay and retreat of the ice cover in the summer MIZ.
Maykut, G.A., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Apr. 1984, No.84-07, MP 1780, MIZEX bulletin. 3. Modeling the marginal ice zone, p.15-22, ADA-145 351, 15 refs.
Sea ice distribution, Ice conditions, Ice melting, Solar radiation, Ice water interface, Thermodynamics, Ice floes, Heat flux, Ice mechanics, Seasonal variation, Polynyas.

39-364
On the role of ice interaction in marginal ice zone dynamics.
Leppäranta, M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Apr. 1984, No.84-07, MP 1781, MIZEX bulletin. 3. Modeling the marginal ice zone, p.23-29, ADA-145 351, 7 refs.
Hibler, W.D., III.
Ice mechanics, Ice water interface, Ice edge, Ice cover thickness, Ice conditions, Ice air interface, Rheology, Wind factors, Viscosity, Mathematical models.

39-365
Analysis of linear sea ice models with an ice margin.
Leppäranta, M., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Apr. 1984, No.84-07, MP 1782, MIZEX bulletin. 3. Modeling the marginal ice zone, p.31-36. ADA-145 351.
Ice models, Sea ice, Rheology, Viscosity, Ice edge, Pack ice, Analysis (mathematics), Loads (forces).

39-366
Mesoscale coupled ice/ocean modeling of the marginal ice zone.
Röed, L.P., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Apr. 1984, No.84-07, MIZEX bulletin. 3. Modeling the marginal ice zone, p.37-42. ADA-145 351.
Smedstad, O.M.
Ice water interface, Ice models, Thermodynamics, Ice mechanics, Ice conditions, Water temperature, Models, Time factor.

39-367
Some simple concepts on wind forcing over the marginal ice zone.
Tucker, W.B., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Apr. 1984, No.84-07, MP 1783, MIZEX bulletin. 3. Modeling the marginal ice zone, p.43-48, ADA-145 351, 20 refs.
Ice mechanics, Ice edge, Wind pressure, Shear properties, Ice pack, Wind direction, Surface roughness.

39-368
Wind-driven ice drift in a shallow sea.
Overland, J.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Apr. 1984, No.84-07, MIZEX bulletin. 3. Modeling the marginal ice zone, p.49-53, ADA-145 351, 13 refs.
Mofjeld, H.O., Pease, C.H.
Drift, Ice mechanics, Wind factors, Sea ice, Ice water interface, Ocean currents, Ice air interface, Wind velocity, Analysis (mathematics), Models.

39-369
Marginal ice zone modeling: Bering Sea viewpoint.
Niebauer, H.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Apr. 1984, No.84-07, MIZEX bulletin. 3. Modeling the marginal ice zone, p.55-62, ADA-145 351, 21 refs.
Alexander, V.
Ice models, Sea ice distribution, Ice conditions, Oceanography, Wind factors, Bering Sea.

39-370
Variation of the drag coefficient across the Antarctic marginal ice zone.
Andreas, E.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Apr. 1984, No.84-07, MP 1784, MIZEX bulletin. 3. Modeling the marginal ice zone, p.63-71, ADA-145 351, 40 refs.
Tucker, W.B., Ackley, S.F.
Ice conditions, Sea ice distribution, Ice edge, Atmospheric circulation, Ice surface, Surface roughness, Air temperature, Wind direction, Ice models, Boundary layer, Antarctica—Weddell Sea.
In Oct. 1981 the U.S.-USSR Weddell Polynya Expedition crossed the Antarctic marginal ice zone (MIZ) near the Greenwich Meridian on the *Michail Somov.* Five radiosondes, launched along a 150-km track starting at the ice edge, showed profound modification of the atmospheric boundary layer (ABL) as increasing surface roughness decelerated the flow. An equation is presented for the dependence of the drag coefficient on ice concentration that should be useful for modeling the surface stress in marginal ice zones. The sounding profiles and meteorological data provided a comprehensive look at how surface roughness and temperature changes in the MIZ can affect the ABL.

39-371
Mechanism for floe clustering in the marginal ice zone.
Lepparanta, M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Apr. 1984, No.84-07, MP 1785, MIZEX bulletin. 3. Modeling the marginal ice zone, p.73-76, ADA-145 351, 3 refs.
Hibler, W.D., III.
Ice floes, Ice conditions, Sea ice distribution, Ice edge, Drift, Ice mechanics, Ice cover thickness.

39-372
Markov model for sea ice trajectories.
Colony, R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Apr. 1984, No.84-07, MIZEX bulletin. 3. Modeling the marginal ice zone, p.77-81, ADA-145 351, 3 refs.
Drift, Ice models, Sea ice, Ice mechanics, Ice floes, Analysis (mathematics).

39-373
Internal wave forces on ice keels in the marginal ice zone: some preliminary laboratory results.
Muench, R.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Apr. 1984, No.84-07, MIZEX bulletin. 3. Modeling the marginal ice zone, p.83-89, ADA-145 351, 6 refs.
Hachmeister, L.E.
Ice mechanics, Wave propagation, Ice bottom surface, Ice edge, Loads (forces), Ice physics, Wind factors, Ocean currents, Sea ice, Models.

39-374
Mean ice motion in the Arctic Ocean.
Colony, R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Apr. 1984, No.84-07, MIZEX bulletin. 3. Modeling the marginal ice zone, p.91-94, ADA-145 351, 4 refs.
Ice mechanics, Sea ice, Drift, Ice floes, Drift stations, Arctic Ocean.

39-375
Weddell polynya as a consequence of hydrophysical processes in the Weddell circulation. [Polyn'ia Ueddella kak sledstvie gidrofizicheskikh protsessov v krugovorote Ueddella],
Bagriantsev, N.V., et al, *Akademiia nauk SSSR. Doklady,* 1984, 276(5), p.1238-1242, In Russian. 13 refs.
Sarukhanian, E.I.
Polynyas, Ocean currents, Antarctica—Weddell Sea.
Oceanographic data collected in Jan.-March 1981, on the water mass distribution and mixing of the Antarctic Circumpolar Current with the warm Weddell counter-current, and their interaction with the warm and strong winds blowing over the Weddell Sea, are used to explain the formation of polynyas in the area.

39-376
Sea ice microbial community: distribution, abundance, and diversity of ice bacteria in McMurdo Sound, Antarctica, in 1980.
Sullivan, C.W., et al, *Applied and environmental microbiology,* April 1984, 47(4), p.788-795, 41 refs.
Palmisano, A.C.
Sea ice, Biomass, Cryobiology, Microbiology, Bacteria, Antarctica—McMurdo Sound.
An abundant and diverse bacterial community was found within brine channels of annual sea ice and at the ice-seawater interface in McMurdo Sound in 1980. Vertical profiles of ice cores 1.3-2.5 m long showed that 47% of the bacterial numbers and 93% of the bacterial biomass were located in the bottom 20 cm of sea ice. Ice bacterial biomass concentration was > 10 times higher than bacterioplankton from the water column. Scanning electron micrographs showed a variety of morphologically distinct cell types, including coccoid, rod, fusiform, filamentous and prosthecate forms; dividing cells were commonly observed. Approximately 70% of the ice bacteria were free-living and 30% were attached to living algal cells or detritus. Interaction between ice bacteria and microalgae was suggested by a positive correlation between bacterial numbers and chlorophyll *a* content of the ice. Scanning and transmission EM revealed a close physical association between epibacteria and a dominant ice alga of the genus *Amphiprora.* It is proposed that sea ice microbial communities are not only sources of primary production, but also sources of secondary microbial production in polar ecosystems and that a detrital food web may be associated with polar sea ice. (Auth.)

39-377
Sensitivity of the mass transfer at the antarctic ice sheet to climatic changes.
Mokhov, I.I., et al, *Soviet meteorology and hydrology,* 1983, No.11, p.38-45, 22 refs.
Petukhov, V.K., Rusin, I.N.
Heat balance, Glacial meteorology.
For Russian original and abstract see 1-29502 or 38-2685.

39-378
Snowcraft/survival school: learning to work in Antarctica.
Lasorsa, D.P., et al, *Antarctic journal of the United States,* June 1984, 19(2), p.5-9.
Bresnahan, D.M.
Cold weather survival, Safety, Portable shelters, Snow houses.
The school is organized and conducted to teach field parties how to function in the cold while wearing heavy clothing. Researchers are taught the art of survival using ropes, ice axes, tents and other gear and equipment. Shelter building, mountaineering, weather, situation handling, and environmental hazards are among the courses taught to field parties. Techniques for coping with the very different and difficult camping problems encountered in the dry valleys are also taught.

39-379
Flow law for isotropic and anisotropic ice at low strain rates.
Lile, R.C., *Australian National Antarctic Research Expeditions. ANARE reports,* 1984, No.132, 93p., Refs. p.89-93.
Ice creep, Ice mechanics, Anisotropy, Rheology, Stresses, Strains, Mathematical models.
One of the weakest links in present ice dynamics models is the lack of an adequate empirical flow law for polycrystalline ice in its natural state. Inadequacies include a paucity of creep data relevant to cold ice masses and a general neglect of the effects of preferred crystal orientation fabrics. The present study reports the results of 150,000 hours of creep tests on isotropic aggregates replicating conditions of temperature and shear stress relevant to polar ice masses, from which an extended isotropic flow law has been constructed. The quantitative model developed for this purpose is made possible by: (a) the definition of a normalised third deviatoric stress invariant as a configuration parameter describing the geometrical distribution of shear stress and (b) a reinterpretation of the scalar geometric factor employed in the analysis of monocrystalline creep as a tensor coefficient of correlation between the orientation fabric and the stress configuration parameter. Laboratory experiments are presented to substantiate the validity of the model. (Auth.)

39-380
Reports of the U.S.-U.S.S.R. Weddell Polynya Expedition, October-November 1981, Volume 5, Sea ice observations.
Ackley, S.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Jan. 1983, SR 83-2, 6p. + 59p., ADA-130 140, 4 refs.
Smith, S.J.
Sea ice distribution, Polynyas, Ice conditions.
Sea ice conditions are presented in several formats. These include an ice conditions map prepared by the ship's meteorological crew, a narrative ice log supplemented by photographs taken by one of the authors, and daily satellite photographs. These are presented in a format compiling each day's conditions on one or two pages. These observations are being correlated with other satellite-based estimates of ice conditions, and with other oceanographic and meteorological measurements made during the expedition. (Auth.)

39-381
Performance of the Allegheny River ice control structure, 1983.
Deck, D.S., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* May 1984, SR 84-13, 15p., ADA-144 094, 3 refs.
Gooch, G.
Ice control, Ice booms, River ice, Frazil ice, Ice breakup, Ice jams, United States—Pennsylvania—Allegheny River.
Oil City, Pennsylvania, is at the confluence of the Allegheny River and Oil Creek. The business district is located in the flood plain, and ice jam flooding has been a persistent problem. A floating ice control structure was installed on the Allegheny River prior to the 1983 ice season. The structure was a steel pontoon ice boom located upstream of Oil City and was used to encourage early formation of an ice cover at this location. This would suppress prolonged frazil ice generation, which in the past led to a massive freezeup jam downstream. This accumulation would prevent the discharge of ice from Oil Creek during breakup, when ice jam flooding would occur. The performance of the structure during its first year is documented here. Oil City escaped ice jam flooding during the winter of 1983.

39-382
Mechanical properties of multi-year sea ice. Testing techniques.
Mellor, M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Apr. 1984, CR 84-08, 39p., ADA-144 431, 17 refs.
Cox, G.F.N., Bosworth, H.
Ice mechanics, Sea ice, Static loads. Compressive properties, Tensile properties, Equipment, Ice sampling, Tests.
This report describes the equipment and procedures that were used for acquiring, preparing and testing samples of multi-year sea ice. Techniques and procedures are discussed for testing ice samples in compression and tension at constant strain rates and constant loads, as well as in a conventional triaxial cell. A detailed account is given of the application and measurement of forces and displacements on the ice test specimens under these different loading conditions.

39-383
Modeling two-dimensional freezing using transfinite mappings and a moving-mesh finite element technique.
Albert, M.R., *U.S. Army Cold Regions Research and Engineering Laboratory,* May 1984, CR 84-10, 45p., ADA-144 131, 29 refs.
Freezing, Phase transformations, Heat transfer, Boundary value problems, Mathematical models, Latent heat.
Freezing phase change problems in conduction heat transfer represent a set of moving boundary problems for which much interest currently exists. In the work presented here, two-dimensional freezing is modeled by incorporating the use of transfinite mappings with a moving-mesh finite element technique. The use of transfinite mapping in governing interior mesh motion is shown to provide very acceptable results and is demonstrated to be the most efficient general computational technique used to date. The model developed is capable of using either Cartesian or (r,z) cylindrical coordinates. Both frozen and unfrozen phases may be modeled when conduction governs behavior in both. In the case of freezing of a fluid as it flows through a pipe the usefulness of always having the phase boundary coincident with element boundaries is demonstrated. Results of the model are shown to compare well with analytical and experimental results. A von Neumann stability analysis is performed for the numerical solution and tends to support the observation that the occurrence of a high Peclet number in the moving-mesh model of heat conduction may produce distortions of the numerical solution.

39-384
Sea ice data buoys in the Weddell Sea.
Ackley, S.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* May 1984, CR 84-11, 18p., ADA-144 953, 6 refs.
Holt, E.T.
Sea ice distribution, Pack ice, Drift, Weather observations, Drift stations, Atmospheric pressure, Air temperature, Antarctica—Weddell Sea.
Data obtained from two sets of data buoys either air dropped or deployed by ship onto the Weddell Sea pack ice during the period from Dec 1978 to Nov 1980 are presented. The buoy data include position, pressure and temperature information and to date represent the most complete combined weather and pack ice drift records for the ice-covered southern ocean regions. The buoys tended to drift north initially and then to turn east generally between latitudes 62 S and 64 S. Buoy 1433 turned east farther south at approximately 67 S but at about the same time as buoy 0527, implying that the westerly wind belt was farther south than usual in 1979. The range of air pressures—from about 950 mb to about 1020 mb—is typical of the circumpolar low pressure trough in the Southern Hemisphere. All buoys were equipped with an internal or compartment temperature sensor. The buoys also contained an external air temperature sensor in a ventilated, shielded can at 1-m height. Although differences of 10 C or more between recorded air and compartment temperatures are common, the correlation between the two measured temperatures is generally very good. The compartment temperatures are high, probably because the

buoy is radiationally heated. We found that subtracting 3 C from the average daily compartment temperature yielded a good estimate of the average air temperature for any given day. This technique can be used to construct average daily air temperature records for the 1979 buoys which only contained the internal or compartment temperature sensor.

39-385
Icing rate on stationary structures under marine conditions.
Itagaki, K., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1984, CR 84-12, 9p., ADA-145 797, 7 refs.
Icing, Offshore structures, Ice formation, Offshore drilling, Ship icing, Sea spray, Wind velocity, Analysis (mathematics).
The rate of ice accumulation on stationary structures was calculated using published data. The results were compared with icing measured on board ships. Although the general trend of this calculation indicated parallelism with the onboard measurements, the measured ice accumulation rate on ships needed a 5 to 8 m/s higher windspeed to correspond with the calculated rate for stationary structures.

39-386
Nitrogen removal in wastewater ponds.
Reed, S.C., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1984, CR 84-13, 26p., ADA-144 971, 26 refs.
Waste treatment, Ice cover effect, Water treatment, Sanitary engineering, Ponds, Chemical analysis, Mathematical models, Nitrogen.
Nitrogen removal from wastewater can be required in a number of situations, and many military facilities have been or will be retrofitted for this purpose. Treatment lagoons and holding or storage ponds are a common treatment method or a common component in many systems. Qualitative observations over several decades document nitrogen losses from these systems due to a variety of possible biochemical interactions. This analysis is based on an extensive body of quantitative data recently published by the U.S. EPA. A mathematical model was developed and validated that indicated that nitrogen removal from pond systems is dependent on pH, temperature, and detention time. The specific biochemical factors could not be isolated, but the analysis suggests that volatilization of ammonia is the major pathway for nitrogen loss. The model can be used as a design equation for new facilities, for retrofits, and for land treatment systems with storage ponds, since nitrogen is a critical design parameter in these cases.

39-387
Baseline acidity of ancient precipitation from the South Pole.
Cragin, J.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1984, CR 84-15, 7p., ADA-145 007, 33 refs.
Giovinetto, M.B., Gow, A.J.
Ice composition, Ice cores, Drill core analysis, Precipitation (meteorology), Chemical properties, Firn, Paleoclimatology, Antarctica—Amundsen-Scott Station.
Measurements of meltwater pH from annual layers of South Pole firn and ice samples ranging in age from 40 to 2000 years B.P. show that precipitation at this remote site has a higher natural acidity than that expected from atmospheric equilibrium with CO2. The average pH of deaerated (CO2-free) samples was 5.64, while air-equilibrated samples averaged 5.37, a pH that is about a factor of two more acidic than the expected background pH of 5.65. The observed "excess" acidity can be accounted for by natural SO4 and NO3 ion levels in the samples probably originating from non-anthropogenic H2SO4 and HNO3. Because of the presence of these naturally occurring acids in South Pole precipitation, a pH of 5.4 is considered a more representative baseline reference pH for acid precipitation studies.

39-388
Beaufort Sea Meteorological and Oceanographic Program (BEAUMOP), Summer 1978. Final report.
Oceanographic Services, Inc., Santa Barbara, CA, Feb. 1979, 23p. + appends., OSI 4673, Unpublished manuscript. 1 ref.
Ice conditions, Sea ice distribution, Marine meteorology, Oceanography, Ice forecasting, Meteorological data, Ocean waves, Ocean currents, Salinity, Offshore structures, Tides, Beaufort Sea.

39-389
Life of the Earth. Global tectonics and dynamics of natural processes. [Zhizn' Zemli. Global'naia tektonika i dinamika prirodnykh protsessov],
Ushakov, S.A., ed, Moscow, Universitet, 1984, 152p., In Russian. For selected papers see 39-390 through 39-394. Refs. passim.
Soil formation, Mountain glaciers, Slope processes, Avalanche formation, Glacier surges, Glacial lakes, Snow cover distribution, Glaciation, Spaceborne photography, Photointerpretation, Slope erosion, Infrared photography, Revegetation, Subarctic landscapes, Tundra, Forest tundra, Cryogenic soils.

39-390
Natural conditions of avalanche formation in the BAM zone and their evaluation for economic development. [Prirodnye usloviia lavinoobrazovaniia zony BAMa i ikh otsenka v tseliakh ratsional'nogo osvoeniia],
Lapteva, N.I., Zhizn' Zemli. Global'naia tektonika i dinamika prirodnykh protsessov (Life of the Earth. Global tectonics and dynamics of natural processes) edited by S.A. Ushakov, Moscow, Universitet, 1984, p.62-66, In Russian. 4 refs.
Avalanche formation, Snow cover stability, Avalanche forecasting, Baykal Amur railroad, Avalanche triggering, Permafrost beneath structures, Mountain glaciers, Snow cover distribution, Slope processes.

39-391
Expected surge of the Medvezhiy glacier in the Pamirs. [Ob ozhidaemoi podvizhke lednika Medvezh'ego na Pamire],
Dolgushin, L.S., Zhizn' Zemli. Global'naia tektonika i dinamika prirodnykh protsessov (Life of the Earth. Global tectonics and dynamics of natural processes) edited by S.A. Ushakov, Moscow, Universitet, 1984, p.66-69, In Russian. 2 refs.
Flow rate, Mountain glaciers, Glacial lakes, Glacier surges, Glacier ice, Glacier alimentation, Glacier flow.

39-392
Studying snow cover with the help of satellite information. [Vozmozhnost' ispol'zovaniia kosmicheskoi informatsii dlia izucheniia snezhnogo pokrova],
Ushakova, L.A., Zhizn' Zemli. Global'naia tektonika i dinamika prirodnykh protsessov (Life of the Earth. Global tectonics and dynamics of natural processes) edited by S.A. Ushakov, Moscow, Universitet, 1984, p.73-79, In Russian. 5 refs.
Infrared photography, Spaceborne photography, Photointerpretation, Snow cover distribution, Glaciation, Ice physics, Snow physics.

39-393
Peculiarities of soil formation on light rocks in the West Siberian tundra and forest tundra. [Osobennosti pochvoobrazovaniia na legkikh porodakh v Zapadno-Sibirskoi tundre i lesotundre],
Liverovskaia, I.T., Zhizn' Zemli. Global'naia tektonika i dinamika prirodnykh protsessov (Life of the Earth. Global tectonics and dynamics of natural processes) edited by S.A. Ushakov, Moscow, Universitet, 1984, p.85-91, In Russian. 10 refs.
Cryogenic soils, Loams, Sands, Soil formation, Ecology, Subarctic landscapes, Tundra, Climatic factors, Forest tundra.

39-394
Processes of soil formation and revegetation on eroded slopes of northern West Siberia. [O protsessakh formirovaniia pochvenno-rastitel'nogo pokrova na erodirovannykh sklonakh severa Zapadnoi Sibiri],
Shishkina, L.P., et al, Zhizn' Zemli. Global'naia tektonika i dinamika prirodnykh protsessov (Life of the Earth. Global tectonics and dynamics of natural processes) edited by S.A. Ushakov, Moscow, Universitet, 1984, p.91-96, In Russian. 9 refs.
Signalova, O.B.
Slope processes, Soil erosion, Human factors, Revegetation, Soil formation, Subarctic landscapes, Tundra, Forest tundra, Continuous permafrost.

39-395
Cold ocean engineering bibliography.
Goodwin, C.R., ed, *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-CORE publication*, June 1984, No.84-12, ASTIS occasional publication, No.12, 169p.
Whittick, J.A., ed, Howard, L.M., ed, Finley, J.C., ed, Rodden, B.D., ed.
Engineering, Ice navigation, Subsea permafrost, Offshore structures, Oceanography, Bibliographies, Polar regions, Ice surveys, Snow surveys, Natural resources, Marine geology.

39-396
Particle simulation of snow avalanche motion.
Perla, R., et al, *Cold regions science and technology*, Aug. 1984, 9(3), p.191-202, 35 refs.
Lied, K., Kristensen, K.
Avalanche modeling, Avalanche mechanics, Avalanche deposits, Snow mechanics, Particles, Computer programs.

39-397
Reservoir bank erosion caused by ice.
Gatto, L.W., *Cold regions science and technology*, Aug. 1984, 9(3), MP 1787, p.203-214, Refs. p.211-214.
Ice erosion, Banks (waterways), Reservoirs, Ice conditions, Water level, Bottom sediment, Shore erosion.
The purpose of this study was to evaluate the documented and potential importance of ice erosion along reservoir banks. The evaluation is based on a literature review and on inferences drawn from field observations and experience. Very little is known about the amount of reservoir bank erosion caused by ice action, although considerable information exists on ice erosion processes along the shorelines and beaches of oceans, rivers and lakes. The importance of ice-related erosion along a reservoir bank would depend primarily on water level, but ice conditions and bank sediment characteristics would also be important. If the reservoir water level is at bank level, ice could directly erode a bank face. If the water is below the bank, ice would have no direct effect on it. However, ice could indirectly increase bank instability by disrupting and eroding nearshore and beach zones, which could lead to bank erosion.

39-398
Measurement of shear strength of granular/discontinuous-columnar sea ice.
Frederking, R.M.W., et al, *Cold regions science and technology*, Aug. 1984, 9(3), p.215-220, 8 refs.
Timco, G.W.
Sea ice, Shear strength, Stress strain diagrams, Loads (forces), Temperature effects, Salinity, Tests, Time factor.

39-399
Preliminary investigation of thermal ice pressures.
Cox, G.F.N., *Cold regions science and technology*, Aug. 1984, 9(3), MP 1788, p.221-229, 16 refs.
Ice pressure, Ice thermal properties, Stresses, Rheology, Ice temperature, Lake ice, Mathematical models, Hydraulic structures.
Measured ice stress data are needed to verify and improve thermal ice thrust prediction models used in estimating ice forces on dams, bridge piers, locks and other hydraulic structures. During February and March, 1983, thermal ice pressures were measured in the ice on a small lake in central New Hampshire. Even though the ice sheet was relatively warm and only exhibited small changes in temperature, stresses up to 200 to 300 kPa were recorded with a newly designed biaxial ice-stress sensor. Ice stresses normal and parallel to the shore of the lake were similar. Given the rate of change of temperature of the ice, ice pressures were calculated for the measurement period using a uniaxial rheological model consisting of a spring and nonlinear dashpot connected in series. Calculated and measured stresses were in good agreement.

39-400
Compacted snow as a pavement material for runway construction.
Russell-Head, D.S., et al, *Cold regions science and technology*, Aug. 1984, 9(3), p.231-247, 17 refs.
Budd, W.F., Moore, P.J.
Snow compaction, Runways, Construction materials, Pavements, Bearing strength, Snow hardness, Tests, Temperature effects, Antarctica—Law Dome.
An analysis of snow compaction and hardness has been carried out to assess the prospects for preparation of a compacted snow runway for wheeled aircraft on Law Dome near Casey, Antarctica. Snow which successfully duplicates the in situ surface snow on the Law Dome has been made in the laboratory. Compaction, unconfined compression and California Bearing Ratio (CBR) tests have been performed on this laboratory-made snow. The CBR value of compacted snow depends strongly on its density. A pavement CBR value of not less than 10 is required by a wheeled C130 aircraft and this was achieved at a snow density of 0.6 Mg cu m. The CBR strength of compressed snow increased with time after compaction. The temperature of the compacted snow did not influence the CBR strength of the snow as strongly as the density. However, snow is more easily compacted to high densities at higher temperatures. The pavement thickness required for C130 operation depends on the pavement CBR, the subgrade CBR and the acceptable wheel settlement. Calculations indicate that for a wheel settlement of 20 mm, a pavement CBR of 10 and a subgrade CBR of 3, a minimum pavement thickness of about 0.5 m is required. (Auth. mod.)

39-401
Analysis of the viscoelastic fracture toughness and crack growth in ice.
Hamza, H., et al, *Cold regions science and technology*, Aug. 1984, 9(3), p.249-258, 26 refs.
Muggeridge, D.B.
Ice cracks, Viscoelasticity, Fracturing, Loads (forces), Ice loads, Offshore structures, Ice solid interface, Crack propagation, Mathematical models, Stresses, Strains.

39-402
Comparison of snowdrift modeling criteria: commentary on "Application of Anno's modeling conditions to ontdoor modeling of snowdrifts".
Iversen, J.D., *Cold regions science and technology*, Aug. 1984, 9(3), p.259-265, 11 refs.
Snowdrifts, Wind tunnels, Snow fences, Wind direction, Mathematical models, Countermeasures.

39-403
Preliminary results on the fatigue behaviour of polycrystalline freshwater ice.
Nixon, W.A., et al, *Cold regions science and technology*, Aug. 1984, 9(3), p.267-269, 5 refs.
Smith, R.A.
Ice mechanics, Ice crystal structure, Fatigue (materials), Loads (forces), Ice creep, Ice deformation, Strains, Compressive properties, Tests.

39-404
New creep equation for frozen soils and ice.
Gardner, A.R., et al, *Cold regions science and technology*, Aug. 1984, 9(3), p.271-275, 8 refs.
Jones, R.H., Harris, J.S.
Soil creep, Ice creep, Rheology, Frozen ground mechanics, Strains, Stresses, Analysis (mathematics), Temperature effects.

39-405
Controlling snow surface strength measurements with a handheld calculator.
Marticelli, M., Jr., et al, *Cold regions science and technology*, Aug. 1984, 9(3), p.277-281, 1 ref.
Ozment, A.
Snow strength, Snow surface, Snowdrifts, Wind velocity, Measuring instruments, Computer applications.

39-406
Static determination of Young's modulus in sea ice.
Richter-Menge, J.A., *Cold regions science and technology*, Aug. 1984, 9(3), MP 1789, p.283-286, 3 refs.
Ice mechanics, Sea ice, Strains, Loads (forces), Stresses, Tensile properties, Tests.

39-407
Engineering and geocryological investigations. [Inzhenerno-geokriologicheskie issledovaniia],
Deriugin, A.G., ed, Yakutsk, 1984, 76p., In Russian.
For individual papers see 39-408 through 39-421.
Refs. passim.
Blasting, Earthwork, Frost heave, Engineering geology, Ice (construction material), Earth dams, Geocryology, Permafrost hydrology, Pipelines, Piles, Excavation, Earthquakes, Permafrost beneath structures, Bridges, Artificial ice, Foundations.

39-408
Changes in hydrogeological conditions caused by pipeline construction on permafrost. [Izmenenie gidrogeologicheskikh uslovii pri sooruzhenii truboprovodov na mnogoletnemerzlykh gruntakh],
Stepanova, S.G., Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.3-10, In Russian. 2 refs.
Pipelines, Ground thawing, Permafrost beneath structures, Paludification, Pipe laying, Soil erosion, Frost heave, Permafrost transformation, Transportation.

39-409
Forecasting eolian processes in petroleum areas of the Far North, subject to economic development. [K voprosu prognoza eolovykh protsessov v osvaivaemykh neftegazonosnykh raionakh Krainego Severa],
Orlianskii, V.V., et al, Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.10-15, In Russian. 3 refs.
Sands, Active layer, Soil erosion, Eolian soils, Wind erosion, River basins, Subarctic landscapes, Continuous permafrost, Valleys, Landscape types, Tracked vehicles, Tundra, Forest tundra.

39-410
Changes of the components of geological media in the Vorkuta area, induced by human activities. [Antropogennye izmeneniia komponentov geologicheskoi sredy g. Vorkuty],
Akparisova, G.V., Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.16-26, In Russian. 7 refs.
Foundations, Permafrost hydrology, Municipal engineering, Permafrost control, Suprapermafrost ground water, Permafrost beneath structures, Earthwork, Water chemistry, Embankments, Roads, Urban planning, Continuous permafrost, Buildings.

39-411
Seismic effect of explosion in frozen and hard rocks. [O seismicheskom deistvii vzryva pri rykhlenii promorozhennykh i skal'nykh gruntov],
[Akovlev, S.V., et al, Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.27-29, In Russian. 3 refs.
Pyshkin, B.A.
Earthwork, Rock excavation, Explosion effects, Frozen ground mechanics, Municipal engineering.

39-412
Engineering and seismic investigations of dams built in permafrost areas. [Inzhenerno-seismologicheskie issledovaniia nasypi v raione rasprostraneniia mnogoletnemerzlykh porod],
Tikhonov, V.V., Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.29-32, In Russian.
Hydraulic structures, Earth dams, Permafrost beneath structures, Permafrost physics, Earthquakes.

39-413
Earthquake danger to perennially frozen hard and coarse clastic rocks. [Seismicheskaia opasnost' mnogoletnemerzlykh skal'nykh i krupnooblomochnykh gruntov],
Ivanov, F.I., Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.32-34, In Russian.
Earthquakes, Permafrost structure, Permafrost thickness, Seismic surveys, Seismic velocity.

39-414
Engineering and seismic studies at a bridge-crossing construction site in a permafrost area. [Inzhenerno-seismologicheskie issledovaniia na mostovom perekhode v raione rasprostraneniia mnogoletnemerzlykh porod],
Tikhonov, V.V., et al, Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.34-37, In Russian.
Maslennikova, G.N.
Bridges, Seismic velocity, Permafrost beneath rivers, Taliks, Permafrost hydrology, Seismic surveys, Earthquakes, River crossings, Measuring instruments.

39-415
Interaction between foundations and freezing frost-heaving ground. [Vzaimodeistvie fundamentov s promerzaiushchim puchinistym gruntom],
Elgin, B.B., Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.37-42, In Russian. 3 refs.
Soil freezing, Frost penetration, Foundations, Frost heave, Buildings.

39-416
Bearing strength of pile foundations built on thawing plastic-frozen ground. [Nesushchaia sposobnost' osnovanii svai na ottaivaiushchikh plastichno-merzlykh gruntakh],
Sal'nikov, P.I., et al, Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.42-48.
Torgashev, V.V.
Pile structures, Foundations, Permafrost beneath structures, Plastic deformation, Frozen fines, Clays, Sands, Frozen ground temperature, Bearing strength.

39-417
Engineering and glaciological aspects of building artificial ice platforms in the Arctic. [Inzhenerno-gliatsiologicheskie aspekty sozdaniia iskusstvennykh ledianykh platform v Arktike],
Latalin, D.A., et al, Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.48-52, In Russian.
Gagarin, V.E.
Supports, Artificial ice, Ice (construction material), Drilling rigs.

39-418
Studies and estimates concerning snow-ice formations on roads of eastern Siberia. [Izuchenie i prognozirovanie snezhno-ledianykh obrazovanii na avtomobil'nykh dorogakh Vostochnoi Sibiri],
Maevskii, A.A., Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.53-58, In Russian. 3 refs.
Winter maintenance, Snowstorms, Snowdrifts, Icing, Roads, Motor vehicles, Concrete pavements, Bituminous concretes.

39-419
Influence of ground freezing and thawing on the mobility of absorbed cations. [Vliianie promerzaniia i protaivaniia gruntov na podvizhnost' pogloshchennykh kationov],
Zolotareva, B.N., et al, Inzhenerno-geokriologicheskie issledovaniia (Engineering and geocryological investigations) edited by A.G. Deriugin, Yakutsk, 1984, p.58-62, In Russian.
Ostroumov, V.E.
Forest soils, Frost penetration, Frozen fines, Ground thawing, Freeze thaw cycles, Soil chemistry.

39-420
Salt transfer in porous media during water filtration in nonisothermal conditions. [Soleperenos v poristykh sredakh pri fil'tratsii podzemnykh vod v neizotermicheskikh usloviiakh],
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Solutions, Water temperature, Soil water migration, Saline soils, Artificial freezing, Ground ice, Waterproofing.

39-421
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Mining, Soil pollution, Cryogenic soils, Active layer, Permafrost hydrology, Minerals, Solutions, Soil water migration.

39-422
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Mining, Permafrost physics, Hardness, Percussion drilling, Blasting, Excavation, Hammers.

39-423
Phase-by-phase melting of ice on compensated networks, using arc-suppression reactors with superposed magnetization. [Sposob pofaznoi plavki gololeda v kompensirovannykh setiakh s ispol'zovaniem dugogasiashchikh reaktorov s podmagnichivaniem],
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Power line icing, Ice prevention, Electric heating, Ice melting.

39-424
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Underground pipelines, Pipeline freezing, Soil freezing, Ice formation, Seasonal freeze thaw.

39-425
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Drains, Permafrost beneath rivers, Permafrost hydrology, Taliks, Water intakes, Water supply.

39-426
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Permafrost origin, Permafrost weathering, Frost penetration, Permafrost dating, Permafrost hydrology, Hydrothermal processes, Permafrost structure, Ice veins, Ice lenses, Ice wedges, Pollen.

39-427
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Artesian water, Frost penetration, Wells, Ground water, Water table, Well casings, Cold weather operation.

39-428
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Icebreakers, Transportation, Ice navigation, Construction equipment, Icebound rivers, Ice breaking, Petroleum industry.

39-429
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Icebound rivers, Ice navigation, Ice breaking, Ice loads.

39-430
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Electrical grounding, Permafrost beneath structures, Railroad tracks, Railroads, Electric power.

39-431
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Snow loads, Wooden structures, Roofs, Ultimate strength, Snow cover distribution, Design.

39-432
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Prefabrication, Concrete structures, Panels, Municipal engineering, Reinforced concretes, Thermal insulation, Large panel buildings, Buildings.

39-433
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Ice forecasting, Ice formation, Ice breakup, Models, Ice accretion, Icebound rivers, Ice cover thickness, Icebound lakes, Ice navigation, Ice conditions.

39-434
Methods of long range forecasting of the freezing dates of the Volga rese voir-cascade. [Metodika dolgosrochnogo prognoza srokov zamerzaniia vodokhranilishch volzhskogo kaskada].
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Reservoirs, Ice formation, Ice accretion, Ice breakup, Ice forecasting, Lakes, Water storage, Ice conditions.

39-435
Influence of stratospheric circulation, water temperature in the northern Atlantic Ocean, and clouds over the Atlantic, on the dates of ice appearance on rivers of the European part of the USSR. [O vliianii stratosfernoĭ tsirkuliatsii, temperatury vody v severnoĭ Atlantike i oblachnosti nad neiu na sroki poiavleniia l'da na rekakh evropeĭskoĭ territorii SSSR].
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River ice, Ice forecasting, Freezeup, Ice formation, Ice cover thickness, Ice conditions, Water temperature, Meteorological factors.

39-436
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Icebound rivers, Slush, Ice formation, Ice accretion, Bottom ice, Ice cover thickness, Mathematical models.

39-437
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Silant'eva, T.P.
Ice breakup, Ice forecasting, Ice cover thickness, Ice cover strength, Ice conditions, Icebound rivers.

39-438
Calculations and short-range forecasts of ice accretion and deterioration on reservoirs of the Volga-Kama cascade, for prolonging ice navigation. [Raschet i kratkosrochnyĭ prognoz narastaniia i razrusheniia ledianogo pokrova na vodokhranilishchakh volzhsko-kamskogo kaskada dlia tseleĭ prodleniia navigatsii].
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Ice navigation, Ice surveys, Ice reporting, Ice forecasting, Ice formation, Ice breakup, Ice cover thickness, Ice cover strength.

39-439
Methods of forecasting ice cover strength on rivers in the BAM zone during ice breakup. [Metodika prognoza kharakteristik prochnosti ledianogo pokrova rek zony Baĭkalo-Amurskoĭ magistrali v period vskrytiia].
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Icebound rivers, Ice cover thickness, Ice breakup, Ice cover strength, Ice conditions, Ice forecasting, Baykal Amur railroad.

39-440
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39-441
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39-442
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Urusevskaia, I.S., *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie*, July-Sep. 1984, No.3, p.3-10, In Russian with English summary. 8 refs.
Mapping, Soil mapping, Landscape types, Permafrost distribution, Cryogenic soils, Tundra, Classifications, Taiga, Steppes.

39-443
Morphological analysis and chemical properties of brown soils in the central Sikhote-Alin' Mountains. [Morfologicheskiĭ analiz profilia i khimicheskie osobennosti gornykh burozemov srednego Sikhote-Alinia].
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Cryogenic soils, Soil profiles, Soil formation, Soil composition, Organic soils, Mountain soils, Alpine landscapes, Taiga.

39-444
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Clays, Podsol, Sands, Soil profiles, Soil formation, Cryogenic soils, Frozen fines, Taiga, Moraines, Landscape types.

39-445
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39-446
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DLC QK1.V7155
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39-447
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Meadow soils, Plant physiology, Steppes, Soil temperature, Frost penetration, Ecosystems, Plant ecology, Cryogenic soils.

39-448
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Tundra, Subarctic landscapes, Alpine landscapes, Plant physiology, Plant ecology, Mapping, Landscape types.

39-449
Peculiarities of Arctic moss flora in the USSR. [Arkticheskaia flora mkhov v SSSR i ee osobennosti],
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Arctic landscapes, Tundra, Plant ecology, Mosses, Swamps, Ecosystems.

39-450
Florogenetic peculiarities of moss floras. [Florogeneticheskie osobennosti mokhovykh flor],
Bardunov, L.V., Tezisy dokladov V delegatskogo s"ezda Vsesoiuznogo botanicheskogo obshchestva (Summaries of papers presented at the 5th convention of the delegates of the All-Union Botanical Society) edited by E.M. Lavrenko, Kiev, 1973, p.178, In Russian.
Mosses, Alpine tundra, Plant physiology, Taiga, Plant ecology, Arctic landscapes.

39-451
Basic problems in studying fungi in the Far North. [Osnovnye voprosy izucheniia gribov Kraĭnego Severa],
Abramov, I.I., et al, Tezisy dokladov V delegatskogo s"ezda Vsesoiuznogo botanicheskogo obshchestva (Summaries of papers presented at the 5th convention of the delegates of the All-Union Botanical Society) edited by E.M. Lavrenko, Kiev, 1973, p.331-332, In Russian.
Tomilin, B.A.
Plant physiology, Environmental impact, Soil formation, Fungi, Arctic landscapes, Cryogenic soils, Plant ecology.

39-452
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Geale, D.W.
Plants (botany), Deserts, Classifications, Polar regions, Canada—Northwest Territories—Bathurst Island.

39-453
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Plant physiology, Biomass, Nutrient cycle, Growth, Cold tolerance, Classifications, Canada—Northwest Territories—Ellesmere Island.

39-454
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39-455
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Oliphant, J.L.
Unfrozen water content, Frozen ground physics, Nuclear magnetic resonance, Particles, Magnetic properties, Ground thawing.
Small ferromagnetic particles in soils locally change the magnetic field of a nuclear magnetic resonance (NMR) analyzer. This causes a decrease in the NMR signal intensity when NMR is being used to measure unfrozen water contents in partially frozen soils or total water contents in thawed soils. We mixed Tuto clay, a soil containing no magnetic particles, with various small amounts of pure powdered magnetite, and determined the NMR signal intensity while the samples were both thawed and partially frozen. Then we derived an equation that correlates the thawed sample signal intensity with the weight percent of powdered magnetite added. The unfrozen water content of the partially frozen samples could be determined accurately for *samples containing up to 0.2 to 0.3% magnetite.* Several methods for demagnetizing soils containing large amounts of magnetic particles were tried, with the most effective found to be stirring a slurry of the soil over a powerful permanent magnet. Accurate unfrozen water contents could be determined for all the partially frozen samples if some form of demagnetizing procedure was used on those samples containing the most magnetic particles.

39-456
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Periglacial processes, Nivation, Paleoclimatology, Erosion, Cirques, Permafrost, Tundra, Snow cover effect, Moraines, Protection, Glaciation, Sweden—Scania.

39-457
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Moraines, Glacier flow, Talus, Ice cores, Geomorphology, Climatic changes, Paleoclimatology, Sweden—Tarfala Valley.

39-458
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39-459
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Glacier ice, Microbiology, Cryobiology.
For Russian original and abstract see B-29180 or 38-1698.

39-460
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Ice melting, Phase transformations, Snow melting, Electric charge, Charge transfer, Snow electrical properties, Supercooled clouds, Ice electrical properties, Ice crystals, Snow crystals.

39-461
Accuracy analysis of radar equipment for thicknesses of fresh-water ice, based on measuring numbers of zeroes and the period of the process. [Analiz tochnosti radiolokatsionnykh tolshchinomerov presnovodnogo l'da rabotaiushchikh na osnove izmereniia chisla nulei i perioda],
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Accuracy, Ice cover thickness, Radar echoes, Icebound lakes, Snow cover effect, Icebound rivers, Measuring instruments.

39-462
Statistical characteristics of radar reflections from layers with rough boundaries (approximation of geometric optics). [Statisticheskie kharakteristiki radiolokatsionnykh signalov otrazhennykh ot sloia s sherokhovatymi granitsami (priblizhenie geometricheskoi optiki)],
[Ufit, G.A., *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1984, Vol.305, p.37-51, In Russian.
Radar echoes, Layers, Interfaces, Roughness coefficient, Ice cover thickness, Snow depth, Snow water equivalent, Swamps, Frost penetration.

39-463
Radar sounding of snow cover on avalanche slopes. [Radiolokatsionnoe zondirovanie snezhnogo pokrova na lavinoopasnykh sklonakh],
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Avalanche formation, Snow cover stability, Snow surveys, Snow cover distribution, Snow depth, Radar echoes, Airborne equipment, Helicopters, Slope processes, Slope stability.

39-464
Modernized radio alarm systems for mudflows. [Modernizirovannyi radiooповestitel' selia],
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Konev, V.A., Presniakov, A.I.
Slope stability, Radio communication, Mudflows, Warning systems, Design, Slope processes.

39-465
Methods of improving the performance of radio alarm systems for mudflows. [Nekotorye metody povysheniia nadezhnosti raboty sistemy radiooповeshcheniia o selevoi opasnosti],
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Konev, V.A., Presniakov, A.I.
Slope stability, Telecommunication, Mudflows, Warning systems, Slope processes.

39-466
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Swamps, Geocryology, Hydrothermal processes, Mapping, Active layer, Frost penetration, Permafrost depth, Permafrost thickness, Permafrost hydrology, Taliks, Permafrost weathering, Permafrost beneath structures, Landscape types, Taiga.

39-467
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Lambina, E.N.
Taiga, Hydrogeology, Soil water migration, Geochemistry, Water chemistry, Exploration, Natural resources, Landscape types, Cryogenic soils.

39-468
Methods of evaluating components of underground drainage for the Uda River basin (western Transbaikal). [Sostavliaiushchie podzemnogo stoka i metody ikh otsenki dlia uslovii Zapadnogo Zabaĭkal'ia (na primere basseina r. Uda)],
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Alimentation, Permafrost distribution, Naleds, Permafrost hydrology, Ice (water storage), Permafrost beneath rivers, Mining, River basins, Water supply.

39-469
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Mitupov, Ch.Ts.
Swamps, Active layer, Soil freezing, Permafrost depth, Peat, Permafrost hydrology, Suprapermafrost ground water, Water supply, Organic soils, Water balance.

39-470
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Tolstikhin, O.N.
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39-471
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Mosses, Alpine tundra, Lichens, Vegetation patterns, Grasses, Microclimatology, Plant ecology, Ecosystems.

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Alpine landscapes, Tundra, Plant ecology, Ecosystems.

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Plant physiology, Arctic landscapes, Ecosystems, Alpine landscapes, Vegetation patterns, Plant ecology.

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Tundra, Vegetation patterns, Alpine landscapes, Plant ecology, Landscape types, Ecosystems, Human factors.

39-525
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Popova, I.A., Popova, O.F.
Tundra, Plant ecology, Plant physiology, Photosynthesis, Transpiration, Arctic landscapes, Subarctic landscapes.

39-526
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Human factors, Vegetation patterns, Environmental protection, Plant ecology, Biomass, Mining, Subarctic landscapes, Economic development.

39-527
Compiling a statistical model of tundra, taking as an example the hummocky and spotty tundras of Taymyr Peninsula. [Metod postroeniia statisticheskoĭ modeli tundry na primere melkobugorkovoĭ i piatnistoĭ tundr Taĭmyra],
Khramtsov, V.N., et al, Vsesoiuznaia konferentsiia "Rastitel'nyĭ pokrov subarkticheskikh vysokogoriĭ i problema arktoal'piiskikh floristicheskikh sviazeĭ", Khibiny, July 10-15, 1984. Tezisy dokladov (All-Union conference "Vegetational cover of Subarctic highlands and problems of Arctic-Alpine floristic bonds", Khibiny, July 10-15, 1984. Summaries) edited by L.N. Filippova, Apatity, 1984, p.104-105, In Russian.
Khramtsova, N.F.
Tundra, Landscape types, Models, Vegetation patterns, Microrelief.

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Lake ice, Snow accumulation, Ice surveys, Snow surveys, Ice conditions, Ice cover thickness, Snow depth, Winter, Measurement.

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Kvenvolden, K.A.
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Snow removal, Vehicles, Railroads, Equipment, Design, Ice removal.

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Carter, L.D.
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39-543
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Aircraft icing, Ice forecasting, Performance, Warning systems.

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Fattah, E.A., Skiadas, N.
Tracked vehicles, Air cushion vehicles, Snow cover effect, Soil trafficability, Topographic effects, Snow density, Soil compaction, Slope orientation, Muskeg, Peat, Pressure, Stresses, Design, Grain size.

39-545
Using the polarization sphere technique in studying the depolarized component of radar reflections from clouds and precipitation. [Issledovanie depoliarizovannoĭ komponenty ekho-signalov ot oblakov i osadkov pri pomoshchi poliarizatsionnoĭ sferyj,
Nazirov, Z.N., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1984, Vol.100, p.3-9, In Russian. 6 refs.
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Parametric model of hailstorm clouds. [Parametricheskaia model' grozo-gradovykh oblakov],
Imamdzhanov, Kh.A., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1984, Vol.100, p.14-21, In Russian. 14 refs.
Hail clouds, Radio echo soundings, Airborne equipment, Hailstones, Ice formation, Data processing, Mathematical models.

39-547
Space-time distribution of seeding zones during cloud modification for increased precipitation. [Prostranstvenno-vremennoe raspredelenie zon vvedeniia reagenta pri aktivnom vozdeĭstvii na oblaka s tsel'iu uveliceniia osadkov],
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Supercooled clouds, Cloud seeding, Nucleating agents, Ice nuclei, Ice formation.

39-548
Two-phase model of electrical conduction in polar ice sheets.
Wolff, E.W., et al, *Journal of geophysical research,* Oct. 10, 1984, 89(B11), p.9433-9438, 43 refs
Paren, J.G.
Ice sheets, Electrical resistivity, Ice electrical properties, Ice composition, Models.
It has been suggested that the dc conductivity of polar ice sheets could be due to the presence of liquid layers at the grain boundaries. These layers would consist of a mixture of acids with water. We show that it is plausible that acids will be at three-grain boundaries in polar ice. Using reliable data for H_2SO_4, HNO_3, and HCl concentrations in ice at South Pole, we derive the correct magnitude and temperature dependence for its conductivity. The model explains the narrow range of ice conductivities found in polar regions. (Auth.)

39-549
Topographic features around Syowa Station as viewed from gravity measurements—some implications on the bedrock topography under the ice sheet.
Nagao, T., *Antarctic record,* Aug. 1984, No.82, p.20-29, In Japanese with English summary and figure captions. 8 refs.
Gravity anomalies, Ice cover thickness.
The coefficients of correlation between the reduced gravity anomaly and the bedrock height were calculated using gravity data in the Lützow-Holm Bay region and on Mizuho Plateau. A good positive relationship between the bedrock height and the reduced gravity anomaly was found on the sea ice and in the ice-free area of Lützow-Holm Bay and in the ice-free area of the Yamato Mountains. On the contrary, the correlation between the reduced gravity anomaly and the bedrock height at gravity stations on the ice sheet whose ice thickness was measured by an ice radar survey showed a weak negative relationship. This fact may suggest that the determination of ice thickness by an ice radar on the ice sheet was inaccurate. The negative relationship between the reduced gravity anomaly and the bedrock height in the Mizuho Plateau means that the isostasy of this area is incomplete. (Auth.)

39-550
Melting ice I at 77K and 10 kbar: a new method of making amorphous solids.
Mishima, O., et al, *Nature,* Aug. 2, 1984, *310(5976), p.393-395, 17 refs.*
Calvert, L.D., Whalley, E.
High pressure ice, Ice melting, Pressure, Temperature effects.

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Snow and ice feedbacks prolong effects of nuclear winter.
Robock, A., *Nature,* Aug. 23, 1984, 310(5979), p.667-670, 19 refs.
Snow cover effect, Sea ice, Nuclear explosions, Dust, Models.

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Avsiuk, G.A., ed, New Delhi, Amerind Publishing Co., 1984, 348p., TT 79-52012, For Russian original see 10A-21685 or 33-3619. For individual papers see A-30630, A-30631, A-30649, B-30650, C-30646, E-30641 through E-30645, E-30648, F-30639, F-30640, H-30651, H-30652, I-30635, J-30637, K-30632 through K-30634, K-30636, K-30638, K-30653 and L-30647, or 39-553 through 39-555.
Meetings, Research projects, Antarctica.
This volume comprises papers read at the 2nd All-Union Conference on Antarctic Research, commemorating the 20th year of Soviet activity and international cooperation in the Antarctic. The papers review the most significant findings in the last 20 years, their practical application in exploiting the polar areas, and the direction research should take in the future.

39-553
Results of Soviet research in the southern ocean.
Treshnikov, A.F., Antarctic Committee reports, No.17. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1984, p.99-116, TT 79-52012, For Russian original see 10J-21693 or 33-3620. 32 refs.
Sea ice distribution, Icebergs.
A history of Soviet Antarctic Expedition work in the southern ocean in the last 20 years is given. Over this period 1,500 oceanographical sampling points were used, hundreds of thousands of miles covered by echo sounding, characteristics of surface circulation studied over 35,000 miles, and deep circulation investigated at 26 stations. Bottom sediments were sampled at more than 500 stations and more than 200 measurements taken of sediment depth. Biological studies include more than 4,000 plankton and 400 benthic probes. These data allowed the geographical limits of the southern ocean to be established, the frontal zones and bordering seas defined, water masses identified, icebergs classified, sea ice masses located and tracked, and both surface and deep water circulation more completely charted. (Auth. mod.)

39-554
Developments in antarctic glaciology.
Kotliakov, V.M., Antarctic Committee reports, No.17. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1984, p.137-154, TT 79-52012, For Russian original see *10F-21695 or 33-3621. 15 refs.*
Ice sheets, Glaciology, Antarctica.
Antarctic glaciology in the last 10 years is reviewed. During this time there has been a shift from complex studies carried out by individual countries to international projects. The article discusses the major one: International Antarctic Glaciological Project: its aims, the area under study, methodology, the Soviet role, and main results to date. The disposal of radioactive waste by burying it in Antarctica is considered but rejected. Antarctic mass balance is estimated and some problems affecting precision of such estimates are discussed. The possibilities either of catastrophic collapse of the West Antarctic ice sheet or of massive surges are touched upon. Suggestions for futher glaciological research in Antarctica are offered. (Auth. mod.)

39-555
Problem of the paleoglaciology of Antarctica.
Bardin, V.I., Antarctic Committee reports, No.17. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1984, p.155-164, TT 79-52012, For Russian original see 10F-21696 or 33-3622. 28 refs.
Paleoclimatology, Glaciation, Antarctica.
The results of paleoglaciological research in Antarctica are reviewed. Studies of the complex of moraines of various ages in Victoria Land, Dronning Maud Land and Mac. Robertson Land have shown definite similarities in main glacial events among these regions and have proved that the East Antarctic ice sheet, at least after it reached its fullest extent, developed as one entity and underwent three great cyclical oscillations. Comparative lithological and morphological descriptions of moraines and glacial sediment dating have led to a correlation of the glacial events in various parts of Antarctica and to an understanding of the general course of East Antarctic Cenozoic glaciation. (Auth. mod.)

39-556
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Hu, C.-K., *Journal of physics A: Mathematical and general,* July 11, 1983, 16(10), p.L321-L326, 10 refs.
Supercooling, Water structure, Hydrogen bonds, Molecular structure, Interfaces, Temperature effects, Mathematical models.

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Lin, K.Y., et al, *Journal of physics A: Mathematical and general,* Aug. 1983, 16(11), p.2515-2519, 11 refs.
Ma, W.J.
Ice physics, Hydrogen bonds, Ice solid interface, Ice models, Ice crystal structure, Analysis (mathematics).

39-558
Oil and gas-fired heat generation systems in Alaska, Vols. 1 and 2.
Johnson, R., *Alaska. Department of Transportation and Public Facilities. Report,* Aug. 1983, AK-RD-84-15, 2 vols., Refs. p.36-39.
Heating, Buildings, Heat transfer, Utilities, Equipment, Construction materials, Cost analysis, Fuels, United States—Alaska.

39-559
Effect of pressure and temperature on the O-H and O-D stretching, and translational vibrations in the Raman spectrum of ice clathrate.
Johari, G.P., et al, *Philosophical magazine,* Mar. 1984, 49B(3), p.281-284, 21 refs.
Chew, H.A.M.
Ice optics, Ice crystal structure, Clathrates, Heavy water, Spectra, Pressure, Temperature effects, Molecular structure.

39-560
Orientation correlation tensor in ice I, III, IV, V and VI.
Johari, G.P., et al, *Philosophical magazine,* July 1984, 50B(1), p.L1-L4, 10 refs.
Jones, S.J., Perez, J.
Ice crystal structure, Ice physics, Anisotropy, High pressure ice, Dielectric properties, Dendritic ice, Tensile properties, Molecular structure, Polarization (charge separation).

39-561
Conductive backfill for improving electrical grounding in frozen soils.
Sellmann, P.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* June 1984, SR 84-17, 19p., ADA-144 861, 14 refs.
Delaney, A.J., Arcone, S.A.
Frozen ground physics, Electrical grounding, Electrical resistivity, Freeze thaw cycles, Permafrost physics, Saline soils, Grain size, Soil temperature, Ground ice, Tests.
This report describes two new methods for computing borehole geometry from discrete measurements of borehole inclination and azimuth. In the first method borehole inclination and azimuth are assumed to vary linearly with arc length. This results in an analytic model of the borehole that is continuous but not smooth. The second model, which takes borehole inclination and azimuth to vary quadratically with arc length between three measuring points, improves the smoothness of the model but the analysis must be carried out numerically. These models were applied to the installations. In all cases salt backfilling reduced the resistance to ground, with 175 ohms being the lowest obtained. Reductions varied from very small to an order of magnitude. Resistance also decreased over several seasons. Generally the greatest improvement and lowest values were obtained in the perennially frozen silt in interior Alaska. Data from colder silt suggest that salt backfilling will not be effective in arctic settings. Measurements at a partially thawed, coarse-grained site indicate that salt was moving much more rapidly (approximately five times as fast) away from the treated backfill than at the silt site in the CRREL permafrost tunnel.

39-562
Effect of seasonal soil conditions on the reliability of the M15 land mine.
Richmond, P.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1984, SR 84-18, 35p., ADB-085 452, In English and Chinese. 2 refs.
Ho, S.C., Dittemore, H.R.
Frozen ground strength, Soil strength, Military engineering, Explosives, Blasting, Meteorological data, Tests.
Inert M15 mines with live fuzes were tested for functioning under four soil conditions (immediately after installation in July, and in November, January and April). The mines were installed using current emplacement doctrine and initiated by driving a tank over them. Results showed significant degradation in functioning rates during winter, which was attributed to frozen soil. A change in installation doctrine is recommended.

39-563
Polarization of skylight.
Bohren, C., *Weatherwise*, Oct. 1984, 37(5), MP 1794, p.261-265.
Light (visible radiation), Polarization (waves), Clouds (meteorology), Light scattering, Photographic techniques, Electromagnetic properties, Optical filters.

39-564
Lake Ontario basin (U.S.A.-Canada) runoff modeling.
Croley, T.E., II, *Journal of hydrology*, Oct. 1983, 66(1/4), p.101-121, 10 refs. For another version see 37-3705.
Runoff, Snowmelt, Watersheds, Mass balance, Mathematical models, Heat balance, Climatic factors, Ontario, Lake.

39-565
Additional frost heave testing on Caen silt.
Hardy (R.M.) and Associates, Ltd., *Canada. Department of Energy, Mines and Resources. Earth Physics Branch. Open file*, [1984], No.84-10, 6p. + appends., With French summary.
Frost heave, Frost resistance, Freeze thaw cycles, Temperature gradients, Pressure, Forecasting, Pipelines, Soil water migration, Tests.

39-566
Analyses of stresses developed in pipelines buried in freezing ground.
Carleton University, Ottawa. Geotechnical Science Laboratories, *Canada. Department of Energy, Mines and Resources. Earth Physics Branch. Open file*, [1984], No.84-9, 59p., With French summary. 5 refs.
Frozen ground mechanics, Underground pipelines, Stresses, Freeze thaw tests, Frost heave, Soil creep, Temperature effects, Deformation.

39-567
Schefferville permafrost research. Volume 1: Parts 1a and 1b—summary, review and recommendations and catalogue of available materials.
Granberg, H.B., et al, *Canada. Department of Energy, Mines and Resources. Earth Physics Branch. Open file*, [1984], No.84-7, 80p. + append., With French summary. Refs. p.42-68.
Lewis, J.E., Moore, T.R., Steer, P., Wright, R.K.
Permafrost physics, Permafrost beneath structures, Permafrost distribution, Permafrost thermal properties, Frozen ground temperature, Freezing points, Ground ice, Forecasting, Computer applications.

39-568
Cold Regions Development Test 2 (DT2) of L16A2 British mortar (XM252) and L31E2 round (XM821).
Hudgens, R.C., et al, *U.S. Army Cold Regions Test Center. Report*, Jan. 1980, No.2-WE-500-016-003, 87p. + appends., ADB-047 501L, 27 refs.
Wendell, C.E., Wilkins, C.W.
Cold weather tests, Military operation, Military equipment, Temperature effects.

39-569
Heaters for vehicles and aircraft in Arctic environments. *U.S. Intelligence Information. Report*, Oct. 26, 1981, No.6 832 5280 81, c100p. DST-81-C-016590.
Heating, Vehicles, Airplanes, Cold weather operation.

39-570
National Weather Service 1981 watch/warning verification flash flood, winter storm and high wind.
Campbell, A.K., *U.S. National Oceanic and Atmospheric Administration. Technical memorandum*, July 1982, NWS FCST-27, 38p., PB83-118 018, 2 refs.
Snowstorms, Flood forecasting, Wind velocity, Weather forecasting.

39-571
Challenge of the Arctic offshore—an introduction.
Gerwick, B.C., Jr., *Marine Technology Society. Journal*, First quarter 1984, 18(1), p.3-4.
Offshore structures, Offshore drilling, Sea ice distribution, Ice conditions, Marine biology, Environmental protection, Arctic Ocean.

39-572
Sea ice mechanics: a general overview.
Croasdale, K., *Marine Technology Society. Journal*, First quarter 1984, 18(1), p.8-16, 29 refs.
Ice mechanics, Sea ice, Drift, Icebreakers, Offshore structures, Ice loads, Ice deformation, Bearing strength, Pressure ridges, Ice pressure, Wind factors, Beaufort Sea.

39-573
Geotechnical issues affecting offshore development: an overview.
Watt, B., *Marine Technology Society. Journal*, First quarter 1984, 18(1), p.17-21, 15 refs.
Offshore structures, Foundations, Sea ice, Marine geology, Subsea permafrost, Ice solid interface, Equipment, Design, Erosion, Thermal effects, Soil strength, Engineering.

39-574
Foundations for offshore structures.
Bea, R.G., *Marine Technology Society. Journal*, First quarter 1984, 18(1), p.22-30, 29 refs.
Offshore structures, Foundations, Pipelines, Ice loads, Bottom sediment, Engineering, Soil strength, Shear strength, Ice scoring.

39-575
Arctic exploration and production structures.
Rojansky, M., *Marine Technology Society. Journal*, First quarter 1984, 18(1), p.31-38, 19 refs.
Ice conditions, Offshore structures, Exploration, Sea ice, Artificial islands, Design, Manufacturing, Offshore drilling, Ice platforms, Arctic Ocean.

39-576
Past and future developments in Arctic structures.
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Kiriukhina, Z.P., Larionov, G.A., Mirgorodskaia, N.N.
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Recent development of cryogenic relief in western Siberia and surface heat balance. [Sovremennoe razvitie kriogennogo rel'efa Zapadnoĭ Sibiri i teplovoĭ balans poverkhnosti],
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39-582
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Fines, Loess, Settlement (structural), Foundations, Wettability, Thixotropy, Bearing strength, Soil compaction, Clay soils.

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Kriukov, V.V.
Snow physics, Snow surveys, Snow depth, Snow cover structure, Snow compaction, Mechanical tests, Shear strength, Measuring instruments.

39-587
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Kim, N.S., Serykovenko, S.A., Oganesian, S.Kh.
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39-589
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Bogacheva, N.D., Bogachev, A.G.
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Physical conditions for thermal disruption of sea ice from below.
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Sukhorukov, K.K.
Ice breakup, Ice melting, Sea ice distribution, Ice prevention, Ice cover thickness, Heat sources, Water temperature, Heat transmission, Arctic Ocean.

39-591
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Tavrizov, V.M., *Hydrotechnical construction,* Nov. 1983 (Publ. May 84), 17(11), p.597-604, Translated from Gidrotekhnicheskoe stroitel'stvo.
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Possibility of estimating the stress-strain of an ice sheet on the basis of the characteristics of a probe pulse.
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Alassy, Ecosystems, Meadow soils, Cryogenic soils, Thermokarst lakes, Plant ecology.

39-594
Dynamic-static method of long range forecasting of soil moisture in open pits, for roadbed construction.
[Dolgosrochnoe prognozirovanie dinamiko-statisticheskim metodom vlazhnosti gruntov v kar'erakh dlia vozvedeniia zemlianogo polotna]
Aleksikov, S.V., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenĭ. Stroitel'stvo i arkhitektura,* 1984, No.7, p.105-109, In Russian. 5 refs.
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Ice sheets on the move.
Drewry, D.J., *Geographical magazine,* July 1984, 56(7), p.356-361.
Ice sheets, Ice age theory, Glaciation.
A review is given of the history of modern glaciology since about 1840 when certain geological features such as moraines and polished rock surfaces were first interpreted as resulting from glacier action. Development of studies on the relationships between ice sheets and the atmosphere is outlined and models of the growth of ice sheets are explained in text and flow diagrams. Examples over the last 150,000 to 200,000 years of these mechanisms and how they operate are described in the former Laurentide and present day Antarctic Ice Sheets.

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Oxygen isotopic ratios of some Himalayan glaciers.
Nijampurkar, V.N., et al, *Tellus,* Sept. 1984, 36B(4), p.300-302, 7 refs.
Bhandari, N.
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39-597
Ice cycles: how concentrated electrical impulses may de-ice tomorrow's aircraft.
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Aircraft icing, Ice removal, Electric charge.

39-598
Precipitation rate and extinction in falling snow.
Seagraves, M.A., *Journal of the atmospheric sciences,* June 1, 1984, 41(11), p.1827-1835, 15 refs.
Snowfall, Snow optics, Absorption, Particle size distribution.

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Repeated nucleation of supercooled water sample.
Wang, M.K., et al, *Journal de recherches atmosphériques,* Jan.-Mar. 1984, 18(1), p.23-29, With French summary. 7 refs.
Vonnegut, B.
Ice nuclei, Ice formation, Supercooling, Water, Freezing, Temperature effects, Time factor, Experimentation.

39-600
On the interaction of aerosol with meteorology.
Hogan, A., et al, *Journal de recherches atmosphériques,* Jan.-Mar. 1984, 18(1), p.41-67, With French summary. Refs. p.64-67.
Aerosols, Ice crystals, Antarctica—Amundsen-Scott Station.
Aerosol concentration, size, charge, and light scattering properties were measured several times a day at the South Pole. Simultaneous particle collections were made two to four times a day. Meteorological observations, including slow rise soundings to determine the structure of the lower atmosphere accompanied these measurements and collections. A seven-day period, which included cloudiness associated with advection of marine air over the station at its beginning, following a period of subsidence, is analyzed. Aerosol concentration was inversely correlated with ozone partial pressure during this event. Marine aerosol components dominated the cloudy and precipitating early phases of the storm. A maximum of marine, terrestrial and sulfur aerosol components occurred at the end of the storm, concurrent with ice crystal precipitation and intermittent supercooled fog, during a period of vigorous mixing caused by cold advection aloft. This was followed by a decrease in tropospheric wind speeds. Strong subsidence and a maximum of terrestrial aerosol with a minimum in sulfur concentration occurred in conjunction with a maximum in surface ozone, 36 hours following the storm. A return to more typical aerosol and ozone concentrations coincided with the reestablishment of more normal atmospheric structure. (Auth.)

39-601
Snowpack estimation in the St. John River basin.
Power, J.M., et al, MP 1799, International Symposium on Remote Sensing of Environment, 14th, San Jose, Costa Rica, Apr. 23-30, 1980. Proceedings, [1980], p.467-486, 11 refs.
Merry, C.J., Trivett, N.B.A., Waterman, S.E.
Snow cover distribution, Snow water equivalent, River basins, Remote sensing, Snowmelt, Vegetation factors, LANDSAT, Accuracy, Computer applications, Models, Mapping.
Two methods for computing basin areal average water equivalent of the snowpack based on point snow course measurements are discussed. One involves the use of a square grid databank of elevations and vegetation types which are regressed against snow water equivalent. The other method utilizes digital tapes of LANDSAT satellite imagery to delineate various vegetation categories throughout a basin. Snowcourse values obtained within a given vegetation category are then distributed over the area within each basin which contains that category of vegetation. Where possible, the methods were checked by deriving snowpack values for six basins in the Upper Saint John River basin for the spring of 1978. These values were then used as input to the SSARR model, and the resulting runoff hydrographs were compared to those obtained using the conventional "isoline mapping" method of distributing the snowcourse values. Lastly, a range of errors were introduced into the conventionally derived snowpack values, and the resulting range in errors of the runoff hydrographs were computed to determine the sensitivity of the SSARR model to errors in snowpack input.

39-602
Melting rates in turbulent recirculating flow systems.
Szekely, J., et al, *International journal of heat and mass transfer,* July 1984, 27(7), p.1116-1121, 10 refs.
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Ice melting, Turbulent flow, Water flow, Heat transfer, Mass transfer, Bubbles, Experimentation.

39-603
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Roach, D.A., et al, *Arctic and alpine research,* Feb. 1984, 16(1), p.37-43, 24 refs.
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Revegetation, Environmental impact, Frost action, Cold tolerance, Damage, Mountains, Soil freezing, Human factors.

39-604
Surface emissivities in a boreal forest during snowmelt.
Price, A.G., et al, *Arctic and alpine research,* Feb. 1984, 16(1), p.45-51, 9 refs.
Petzold, D.E.
Snowmelt, Radiation balance, Snow cover effect, Forest canopy, Snow surface, Vegetation factors, Surface temperature, Air temperature, Analysis (mathematics).

39-605
Dendrochronological evidence of variations of Coleman Glacier, Mount Baker, Washington, U.S.A.
Heikkinen, O., *Arctic and alpine research,* Feb. 1984, 16(1), p.53-64, 45 refs.
Glacier oscillation, Moraines, Age determination, Forest land, Climatic changes, United States—Washington—Coleman Glacier.

39-606
Late Pleistocene equilibrium-line altitudes and modern snow accumulation patterns, San Juan Mountains, Colorado, U.S.A.
Leonard, E.M., *Arctic and alpine research,* Feb. 1984, 16(1), p.65-76, 45 refs.
Snow accumulation, Snow line, Glaciation, Paleoclimatology, Pleistocene, Mountains, United States—Colorado—San Juan Mountains.

39-607
Pedogenic implications of a 14C-dated paleopodzolic soil at Haugabreen, Southern Norway.
Ellis, S., et al, *Arctic and alpine research,* Feb. 1984, 16(1), p.77-91, Refs. p.89-91.
Matthews, J.A.
Podsol, Soil formation, Alpine landscapes, Radioactive age determination, Soil profiles, Norway.

39-608
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Gurnell, A.M., et al, *Arctic and alpine research,* Feb. 1984, 16(1), p.93-106, 24 refs.
Fenn, C.R.
Glacial rivers, Suspended sediments, Sediment transport, Subglacial drainage, Water intakes, Forecasting, Models, Switzerland—Tsidjiore Nouve.

39-609
Characteristics of snowfalls, snow metamorphism, and snowpack structure with implications for avalanching, Craigieburn Range, New Zealand.
Prowse, T.D., et al, *Arctic and alpine research,* Feb. 1984, 16(1), p.107-118, 53 refs.
Owens, I.F.
Snowfall, Metamorphism (snow), Snow cover structure, Avalanche forecasting, Snow density, Temperature gradients, Freeze thaw cycles, Meteorological data, New Zealand—Craigieburn Range.

39-610
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Icebreakers, Ice breaking, Offshore drilling, Ships, Finland.

39-611
***Effect of anisotropic* crystal-melt surface tension on grain boundary groove morphology.**
Voorhees, P.W., et al, *Journal of crystal growth,* Aug. 1984, 67(3), p.425-440, 19 refs.
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Liquid solid interfaces, Anisotropy, Tensile properties, Crystals, Boundary layer, Melting, Temperature gradients, Surface properties, Thermal conductivity.

39-612
Low-temperature effects on flow in sand-bed streams.
Hong, R., et al, *Journal of hydraulic engineering,* Feb. 1984, 110(2), p.109-125. For another variation see 39-275. 14 refs.
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Low temperature tests, Water flow, Water temperature, Sands, Sediment transport, Bottom sediment, Stream flow, Friction, Velocity, Models, Experimentation.

39-613
Foundation analysis for substructures in high altitude permafrost subsurface conditions.
Gehrig, G.B., et al, *Structural engineering practice,* 1983, 2(1), p.1-9, 5 refs.
Nickel, D.D.
Permafrost beneath structures, Foundations, Freeze thaw cycles, Piers, Mountains, Altitude, Design.

39-614
Controlling river ice to alleviate ice jam flooding.
Deck, D.S., MP 1795, Conference [on] Water for Resource Development, Coeur d'Alene, Idaho, Aug. 14-17, 1984. Proceedings, 1984, p.524-528, 4 refs.
Ice jams, Ice control, River ice, Flooding, Ice booms, Ice breakup, Countermeasures.
This paper addresses the author's involvement at two areas where ice jam flooding has caused severe economic hardship and loss of life. An ice boom has been used to control the formation of river ice at Oil City, Pennsylvania, and a permanent ice control structure will be constructed on Cazenovia Creek in West Seneca, New York, to control the river ice during breakup.

39-615
Salmon River ice jams.
Cunnigham, L.L., et al, MP 1796, Conference [on] Water for Resource Development, Coeur d'Alene, Idaho, Aug. 14-17, 1984. Proceedings, 1984, p.529-533, 4 refs.
Calkins, D.J.
Ice jams, River ice, Flooding, Ice conditions, Freeze-up, Ice cover thickness, Ice control, Models, United States—Idaho—Salmon River.
A study was undertaken to document the ice conditions leading to the ice jam flooding along the Salmon River in the vicinity of Salmon, Idaho. This short paper documents the ice conditions on the river during the freeze-up period and the simple analytical model used to predict the advance of the ice cover leading edge. Ice cover thickness in excess of 9 ft. (3 m) were measured at cross sections where shoving had occurred. The initiation of the ice cover for this reach of the river begins in a long, deep pool formed by an alluvial fan from Dump Creek that developed in the late 1800's. By improving the flow conveyance through the alluvial fan and increasing the flow velocity in the backwater behind it, the initiation of the freeze-up ice cover could be delayed, thereby delaying the arrival of the leading edge at Salmon, Idaho, and reducing the potential for ice jam flooding.

39-616
Modeling intake peformance under frazil ice conditions.
Dean, A.M., Jr., MP 1797, Conference [on] Water for Resource Development, Coeur d'Alene, Idaho, Aug. 14-17, 1984. Proceedings, 1984, p.559-563, 5 refs.
Water intakes, Frazil ice, Ice conditions, Water pipes, Icing, Models, Countermeasures.
A water intake was modeled in a refrigerated flume in an active frazil icing environment in order to evaluate alternative modifications to the prototype structure. Conduit dimensions tested were 2.7-in. round, 4.6-in. round, 6-in. square, 8-in. square, and 12-in. square. Entrance shapes tested were square, quarter-rounded, and elliptical. Model flows varied from 50 gpm to 360 gpm, resulting in average model intake velocities of 0.8 fps to 2.8 fps. Corresponding Froude prototype velocities varied from 0.3 fps to 2.0 fps. The length scale varied from 1:6.5 to 1:16. Tests were run until a head was developed across the model intake which was equivalent to a 12-foot head on the prototype, or until the icing tendency of the structure was determined. The icing mechanism observed in the model included stoppering of the intake with ice masses, restriction of the intake with multiparticle masses, and gradual accumulation of frazil ice particles on the intake.

39-617
Correlation of Alaskan varve thickness with climatic parameters, and use in paleoclimatic reconstruction.
Perkins, J.A., et al, *Quaternary research*, Nov. 1983, 20(3), p.308-321, 31 refs.
Sims, J.D.
Glacial deposits, Lacustrine deposits, Geomorphology, Climatic changes, Snowfall, Sediments, Paleoclimatology, Geochronology, Glacial lakes, United States—Alaska—Skilak Lake.

39-618
Large-scale water transfers in the USSR.
Kelly, P.M., et al, *GeoJournal*, 1983, 7(3), p.201-214, 54 refs.
Campbell, D.A., Micklin, P.P., Tarrant, J.R.
Water supply, Climate control, Irrigation, River diversion, River flow, Agriculture, Environmental impact, Sea ice, USSR.

39-619
Publications, reports and theses in geotechnical science, No.10.
Carleton University, Ottawa. Geotechnical Science Laboratories, Dec. 1981, 18p.
Permafrost physics, Glaciology, Periglacial processes, Ice surveys, Bibliographies, Frozen ground physics, Climatic factors.

39-620
Report on current geomorphological research on Cevedale Mountain (Central Alps, Italy). [Compte-rendu sur la recherche géomorphologique en cours au mont Cevedale (Alpes Centrales, Italie)],
Gruppo Ricerca Geomorfologia CNR, *Geografia fisica e dinamica Quaternaria*, 1983, 6(1), p.56-60, In French with English and Italian summaries.
Mountain glaciers, Geomorphology, Glaciology, Research projects, Mapping, Palynology, Italy—Alps.

39-621
Report on the 1982 glaciological survey. [Relazioni della campagna glaciologica 1982], *Geografia fisica e dinamica Quaternaria*, 1983, 6(1), p.72-100, In Italian.
Glacier surveys, Mountain glaciers, Italy.

39-622
Loss of fall-applied 2,4-D spring runoff from a small agricultural watershed.
Nicholaichuk, W., et al, *Journal of environmental quality*, July-Sep. 1983, 12(3), p.412-414, 11 refs.
Grover, R.
Runoff, Snowmelt, Watersheds, Water chemistry, Meltwater, Water pollution, Environmental impact, Agriculture, Snowfall.

39-623
Diurnal freeze-thaw frequencies in selected regions of the high latitudes.
Wexler, R.L., *U.S. Army Corps of Engineers. Engineer Topographic Laboratories. Report*, July 1984, ETL-0364, 22p., 13 refs.
Freeze thaw cycles, Freezing, Frost, Diurnal variations, Temperature variations, Periglacial processes, Cold weather construction, Models.

39-624
Climatological ice accretion modelling.
Meteorological and Environmental Planning Ltd., *Canadian Climate Centre. Report*, 1984, No.84-10, 195p., With French summary. Refs. p.159-165.
Ontario Hydro.
Ice accretion, Ice formation, Climatic factors, Icing, Heat balance, Ice density, Snow accumulation, Freezing, Wet snow, Time factor, Mathematical models.

39-625
Crack extension acoustic emission during fatigue crack growth.
Kim, C.J., et al, Riso International Symposium on Metallurgy and Materials Science, 5th, Roskilde, Denmark, Sep. 3-7, 1984. Proceedings. Edited by H. Andersen et al., Roskilde, Denmark, Riso National Laboratory, 1984, p.349-353, 4 refs.
Weertman, J.
Fatigue (materials), Metals, Crack propagation, Acoustic measurement.

39-626
On the southern boundary of permafrost and periglacial environment during the late period of Late Pleistocene in North and Northeast China.
Cui, Z., et al, *Acta geologica Sinica*, 1984, No.2, p.165-176, In Chinese with English summary. 28 refs.
Xie, Y.
Permafrost distribution, Pleistocene, Periglacial processes, Glaciation, Tundra, Taiga, Ice wedges, Climatic changes, Mountains, China.

39-627
Whiteout.
Grant, R.S., *Canadian aviation*, Oct. 1984, 57(10), p.54-57.
Whiteout, Visibility, Navigation, Airplanes, Snowfall.

39-628
Glaciology of mountain regions (snow cover, avalanches and glaciers). [Gliatsiologiia gornykh oblastei (snezhnyi pokrov, laviny i ledniki)],
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Glazyrin, G.E., ed.
Mountain glaciers, Snow cover distribution, Avalanches, Snow water equivalent.

39-629
Using satellite information on the seasonal snow-line elevation in hydrologic forecasts of Central Asian rivers. [Opyt ispol'zovaniia dannykh o vysote sezonnoi snegovoi granitsy (na osnove sputnikovoi informatsii) dlia gidroprognozov rek Srednei Azii],
Chernov, V.IU., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.105, p.3-14, In Russian. 14 refs.
Snow line, Snow water equivalent, Spaceborne photography, Glacial rivers, Snow cover distribution, Hydrology, Alpine landscapes, Seasonal variations, Runoff forecasting.

39-630
Accuracy of calculation of summary melting of a perennial snow field using global formulas. [O tochnosti rascheta summarnogo taianiia mnogoletnego snezhnika po global'nym formulam],
Pertsiger, F.I., et al, *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.105, p.14-16, In Russian. 5 refs.
Shchetinnikov, A.S.
Nivation, Snow cover distribution, Mountain glaciers, Snow melting, Glacier ablation, Alpine landscapes.

39-631
Studies of snow fields in the Abramov glacier basin. [Issledovaniia snezhnikov v basseine ledn. Abramova],
Pertsiger, F.I., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.105, p.17-24, In Russian. 11 refs.
Mountain glaciers, Nivation, Snow cover distribution, Snow cover structure, Snow stratigraphy, Metamorphism (snow), Snow melting.

39-632
Some unusual forms of snow relief in highlands of Central Asia. [O nekotorykh neobychnykh formakh snezhnogo rel'efa v vysokogornykh raionakh Srednei Azii],
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Ratsek, I.V.
Snow melting, Snow cover distribution, Snow depth, Snow cover structure, Snow cover stability, Snow surveys, Mountain glaciers, Glacier alimentation, Alpine landscapes, Topographic effects.

39-633
Snow resources of the Pamir-Alay Mountains. [Snezhnye resursy Pamiro-Alaia],
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Snow cover distribution, Snow depth, Snow water equivalent, Water reserves, Snow surveys, Mapping, Charts, Alpine landscapes.

39-634
Estimating snow stability on slopes, allowing for the effect of blasting. [Otsenka ustoichivosti snega na sklone s uchetom vozdeistviia vzryvov],
Fomin, A.G., et al, *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.105, p.38-45, In Russian. 22 refs.
Gerber, A.R.
Slope processes, Snow cover distribution, Snow depth, Snow density, Snow cover stability, Blasting, Avalanche triggering, Avalanche forecasting.

39-635
Distribution and regime of snow avalanches in western Tien Shan. [Rasprostranenie i rezhim snezhnykh lavin v Zapadnom Tian'-Shane],
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Akulov, V.V.
Alpine landscapes, Snow cover distribution, Avalanche formation, Avalanche triggering, Avalanche forecasting, Mapping, Charts.

39-636
Statistical analysis of sublimation-recrystallization of snow in mountainous regions of the BAM line. [Statisticheskii analiz protsessov sublimatsionnoi perekristallizatsii snega v gornykh raionakh trassy BAM],
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39-647
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Climate, Meteorological data, Snowfall, Precipitation (meteorology), Weather stations, Freezing points, Degree days, United States—New Hampshire—Hanover.
A 10-year climatological record of meteorological data collected at the CRREL meteorological station is presented for the period October 1972 through December 1982. Data presented include air temperature, heating and freezing degree-days, relative humidity, dew point, precipitation, snowfall, wind speed and direction, solar radiation and evaporation. Air temperature and precipitation monthly and annually are compared statistically to the 30-year normal and the period-of-record normal for Hanover, New Hampshire. The appendix gives daily and monthly values for the entire period of record. Some comparisons are made between the 10-year averages and the long-term normals.

39-648
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39-649
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39-664
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39-671
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39-672
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39-676
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Foundations, Buildings, Permafrost beneath structures, Active layer, Permafrost hydrology, Permafrost control, Baykal Amur railroad.

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39-679
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39-680
Age difference between polar ice and the air trapped in its bubbles.
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Air entrapped in bubbles formed in cold ice has essentially the same composition as that of the atmosphere at the time of bubble formation. The analysis of dated ice samples therefore enables the history of atmospheric composition to be investigated. The age of the entrapped air is, however, not the same as that of the surrounding ice because air bubbles only become isolated from the atmosphere during the transition from firn to ice. Typically the age of the ice at this transition is between 100 and 3,000 yr, depending mainly on firn temperature and snow accumulation rate. The mean age difference between ice and enclosed air, as well as the age distribution width for a given sample, are especially important for the investigation of the anthropogenic increase of CO2 and trace gases in the atmosphere over the last centuries, and for the comparison of climatic parameters recorded in the ice with parameters recorded in the bubbles. For Siple Station this age difference and age distribution width were deduced from the bubble volume measured as a function of depth. The values are 95 yr and 22 yr respectively. (Auth.)

39-681
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Ice mechanics, Drift, Sea ice distribution, Ice physics, Ice navigation, Ice forecasting, Ice conditions, Ice water interface, Remote sensing, Climatic factors.

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39-683
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39-684
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39-685
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39-686
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39-687
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Pack ice, Ice floes, Drift, Ice pressure, Stresses, Analysis (mathematics), Ice cover, Rheology.

39-688
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Pack ice, Drift, Ice breakup, Stresses, Strains, Acoustic measurement, Models.

39-690
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39-691
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Pack ice, Ice friction, Ice breakup, Ice cracks.

39-692
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Timokhov, L.A.
Pack ice, Drift, Ice breakup, Ice floes, Polynyas, Ice navigation, Ice reporting.

39-693
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Fast ice, Ice breakup, Oscillations, Wind factors, Ocean currents, Analysis (mathematics).

39-694
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Gavrilo, V.P., Dynamics of ice cover. Edited by L.A. Timokhov, New Delhi, Amerind Publishing Co., 1984, p.111-117, TT 76-52039, 7 refs. For Russian original see 29-1351.
Pack ice, Ice friction, Pressure ridges, Experimental data, Drift stations.

39-695
Ice cover oscillations caused by free internal gravity waves.
Savchenko, V.G., *Dynamics of ice cover.* Edited by L.A. Timokhov, New Delhi, Amerind Publishing Co., 1984, p.118-122, TT 76-52039, 5 refs. For Russian original see 29-1352.
Pack ice, Oscillations, Water waves, Analysis (mathematics).

39-696
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Pack ice, Drift, Wind factors, Analysis (mathematics).

39-697
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Pack ice, Drift, Ice floes, Distribution, Analysis (mathmatics).

39-698
Unsteady wind drift of sea ice.
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Shirokov, K.P.
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39-699
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Pack ice, Drift, Wind factors, Analysis (mathematics).

39-700
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Gorbunov, IU.A., et al, *Dynamics of ice cover.* Edited by L.A. Timokhov, New Delhi, Amerind Publishing Co., 1984, p.159-168, TT 76-52039, 5 refs. For Russian original see 29-1357.
Losev, S.M.
Airborne radar, Pack ice, Drift, Radar tracking.

39-701
Method of expressing water resistance of an ice cover with complex relief.
Nikiforov, E.G., et al, Dynamics of ice cover. Edited by L.A. Timokhov, New Delhi, Amerind Publishing Co., 1984, p.169-176, TT 76-52039, 3 refs. For Russian original see 29-1358.
Timokhov, L.A.
Pack ice, Drift, Ice water interface, Ice bottom surface, Ice friction, Analysis (mathematics).

39-702
Some characteristics of the friction layer near rough surfaces in the sea.
Doronin, IU.P., et al, Dynamics of ice cover. Edited by L.A. Timokhov, New Delhi, Amerind Publishing Co., 1984, p.177-180, TT 76-52039, 4 refs. For Russian original see 29-1359.
Kreiman, K.D.
Pack ice, Drift, Ice water interface, Ice bottom surface, Ice friction, Ocean bottom, Surface roughness.

39-703
Turbulent fluxes in the surface layer of the atmosphere.
Timokhov, L.A., Dynamics of ice cover. Edited by L.A. Timokhov, New Delhi, Amerind Publishing Co., 1984, p.181-190, TT 76-52039, 6 refs. For Russian original see 29-1360.
Air temperature, Atmospheric circulation, Turbulent boundary layer, Heat transfer, Analysis (mathematics).

39-704
Computation of tangential wind stress taking into account the real distribution of air temperature.
Romanov, V.F., Dynamics of ice cover. Edited by L.A. Timokhov, New Delhi, Amerind Publishing Co., 1984, p.191-206, TT 76-52039, 16 refs. For Russian original see 29-1361.
Pack ice, Drift, Wind factors, Analysis (mathematics).

39-705
Force of friction of air with ice and its relationship with the structure of the near-ice layer of the atmosphere.
Karelin, I.D., et al, Dynamics of ice cover. Edited by L.A. Timokhov, New Delhi, Amerind Publishing Co., 1984, p.207-219, TT 76-52039, 16 refs. For Russian original see 29-1362.
Timokhov, L.A., Trushina, G.V.
Pack ice, Atmospheric circulation, Ice air interface, Friction, Analysis (mathematics), Wind drift.

39-706
Ultracontinental taiga soil formation on calcareous loams in Central Yakutiya.
Sokolov, I.A., et al, *Soviet soil science,* Apr. 1976, No.4, p.144-160, 13 refs. Translated from Pochvovedenie.
Naumov, E.M., Gradusov, B.P., Tursina, T.V., Tsiurupa, I.G.
Taiga, Cryogenic soils, Soil formation, Soil composition, Cryogenic structures, Classifications, Terminology.

39-707
World's coldest seawater. [Verdens kaldeste sjövann],
Foldvik, A., et al, *Naturen,* 1978, 102(6), p.271-275, In Norwegian.
Gade, G.
Sea water freezing.
While sea water normally freezes at temperatures around 1.9 C, water temperatures as low as 2.3 C are reported to have been measured during the Norwegian Antarctic Expedition 1976/77 in the Weddell Sea with salinities between 34.6 and 34.7 per mill. Diagrams showing water temperatures measured at different locations and depths along the Filchner Ice Shelf are presented. The coldest water temperatures were found to occur at a depth of 500 m.

39-708
Why are the antarctic icebergs so large. [Hvorfor er de Antarktiske isfjell så store?],
Orheim, O., *Naturen,* 1978, 102(6), p.277-280, In Norwegian.
Icebergs, Calving.
Arctic icebergs usually are not more than a few hundred meters long, while in the Antarctic icebergs in the hundred square kilometer range are common, and the Trolltunga that calved from Queen Maud Land in 1967 was 5,000 sq km in size. The reason for this is found in the antarctic topography, as explained and illustrated here in a diagram and a photograph.

39-709
Antarctica, icebergs and sea level. [Om Antarktis, isfjell og havnivå],
Maisey, G.H., *Naturen,* 1978, 102(6), p.281-284, In Norwegian.
Ice scoring, Icebergs, Sea level.
Studies of the Weddell Sea bottom made during the 1977 Norwegian expedition, using side-looking sonar, are reported, and examples of the patterns obtained are shown. The technique is found suitable for studying striations made by icebergs, which are indicative of sea level changes since Quaternary time.

39-710
Where do antarctic icebergs drift. [Hvor driver de antarktiske isfjellene?],
Vinje, T.E., *Naturen,* 1978, 102(6), p.285-288, In Norwegian.
Icebergs, Drift.
After a brief history of antarctic iceberg observations, including american satellite observations begun in 1967 and French observations by means of a radio transmitter begun in 1972, the placing of a Norwegian self-positioning transmitter by an American helicopter on an iceberg in the west wind belt of the Weddell Sea is reported. Drift paths of the Trolltunga iceberg and of the icebergs with the French and Norwegian transmitters are shown on a chart.

39-711
Sea ice topography of M'Clure Strait in winter and summer of 1960 from submarine profiles.
McLaren, A.S., et al, *Arctic,* June 1984, 37(2), p.110-120, With French summary. 21 refs.
Wadhams, P., Weintraub, R.
Ice bottom surface, Sea ice distribution, Ice conditions, Pressure ridges, Profiles, Acoustic measurement, Seasonal variations, Beaufort Sea.

39-712
Adaptations of *Luzula confusa* to the polar semi-desert environment.
Addison, P.A., et al, *Arctic,* June 1984, 37(2), p.121-132, With French summary. 44 refs.
Bliss, L.C.
Plant physiology, Snow cover effect, Cold tolerance, Soil water, Deserts, Photosynthesis, Acclimatization, Growth, Polar regions.

39-713
Dynamics of *Sphagnum* in forest and peatland communities in southeastern Labrador, Canada.
Foster, D.R., *Arctic,* June 1984, 37(2), p.133-140, 56 refs.
Mosses, Forest ecosystems, Peat, Soil water, Vegetation, Growth, Fires, Lichens, Hummocks, Distribution, Precipitation (meteorology).

39-714
Observation of diatoms in Greenland ice.
Gayley, R.I., et al, *Arctic,* June 1984, 37(2), p.172-173, 2 refs.
Ram, M.
Ice composition, Cryobiology, Algae, Impurities, Plankton, Scanning electron microscopy, Greenland.

39-715
Buckling analysis of cracked, floating ice sheets.
Adley, M.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1984, SR 84-23, 28p., ADA-147 330, 24 refs.
Sodhi, D.S.
Ice loads, Floating ice, Offshore structures, Ice sheets, Ice pressure, Ice cracks, Analysis (mathematics), Tests, Ice deformation.
A buckling analysis of cracked, floating ice sheets is presented; both symmetrical and unsymmetrical shapes were investigated. The finite element method was used for the in-plane analysis as well as the out-of-plane analysis. The results of the analyses of symmetrically shaped ice sheets are compared to those of previous analyses where a radial stress field was assumed for the in-plane stresses, and there is good agreement between them. The results of theoretical analyses are compared to experimental data obtained in small-scale laboratory experiments.

39-716
Arctic haze.
Schnell, R.C., ed, *Geophysical research letters,* May 1984, 11(5), p.359-472, Refs. passim.
Haze, Ice crystal optics, Aerosols, Air pollution, Visibility, Air masses, Volcanoes, Aerial surveys, Natural resources.

39-717
Allerød-Younger Dryas climatic inferences from cirque glaciers and vegetational development in the Nordfjord area, western Norway.
Larsen, E., et al, *Arctic and alpine research,* May 1984, 16(2), p.137-160, Refs. p.157-160.
Eide, F., Longva, O., Mangerud, J.
Moraines, Lacustrine deposits, Cirque glaciers, Vegetation, Meltwater, Paleoclimatology, Climatic changes, Palynology, Stratigraphy, Norway.

39-718
Population dynamics of alpine tundra soil bacteria, Niwot Ridge, Colorado Front Range, U.S.A.
Mancinelli, R.L., *Arctic and alpine research,* May 1984, 16(2), p.185-192, 57 refs.
Alpine tundra, Soil microbiology, Bacteria, Distribution, Seasonal variations, United States—Colorado—Niwot Ridge.

39-719
Drainage of a marginal ice-dammed lake at Northbogletscher, Johan Dahl Land, South Greenland.
Clement, P., *Arctic and alpine research,* May 1984, 16(2), p.209-216, 18 refs.
Ice dams, Lake ice, Drainage, Water level, Water balance, Water flow, Seasonal variations, Electric power, Greenland—Johan Dahl Land.

39-720
Computer simulation of buoyancy and snow-cover effects in palsa dynamics.
Outcalt, S.I., et al, *Arctic and alpine research,* May 1984, 16(2), p.259-263, 16 refs.
Nelson, F.
Frost mounds, Discontinuous permafrost, Snow cover effect, Buoyancy, Stefan problem, Ground ice, Freeze thaw cycles, Computer applications, Peat.

39-721
Are lichens "extremists" among plants of cold deserts. [Les lichens, plantes "extrémistes" des déserts froids?],
Petit, P., *Inter-nord,* 1983, No.16, p.33-46, In French with English summary. Refs. p.44-46.
Lichens, Deserts, Cold tolerance, Acclimatization, Distribution.

39-722
Sea ice structure of the Greenland Sea from remote sensing (NOAA and LANDSAT). [Etude des structures d'englacement en mer du Groenland par télédétection spatiale (NOAA et LANDSAT)],
Simon, T., *Inter-nord,* 1983, No.16, p.47-66, In French with English summary. 42 refs.
Ice structure, Sea ice, Ice mechanics, Remote sensing, Drift, Pack ice, LANDSAT, Greenland Sea.

39-723
Tentative morphological mapping in a high latitude mountain. Example from Lofoten Islands, North Norway. [Essai de cartographie géomorphologique détaillée dans une montagne de haute latitude. Exemple des îles Lofoten, Norvège du nord],
Peulvast, J.P., *Inter-nord,* 1983, No.16, p.67-81, In French with English summary. 29 refs.
Geomorphology, Alpine glaciation, Mapping, Remote sensing, Topographic features, Alpine landscapes, Mountains, LANDSAT, Weathering.

39-724
Example of a synthetic geomorphological sketch applied to the northeastern coastal plain of Prince Charles Island, Svalbard. [Exemple de croquis géomorphologique synthéthique appliqué au strandflat nord-est de l'Ile du Prince Charles (Svalbard)],
Brossard, T., et al, *Inter-nord,* 1983, No.16, p.83-97, In French with English summary. 5 refs.
Joly, D.
Periglacial processes, Geomorphology, Landscape types, Glaciation, Mountains, Mapping.

39-725
Slope morphology and slope-forming processes in South Victoria Land, Antarctica.
Miotke, F.-D., *Polar geography and geology,* Jan.-Mar. 1984, Vol.8, p.1-53, 62 refs. For German original see 37-4043 or 13E-28398.
Slope processes, Solifluction, Runoff, Patterned ground, Eolian soils, Soil structure, Antarctica—Victoria Land.
Slope-forming processes in South Victoria Land occur under the most severe climatic conditions. Very low temperatures are combined with extreme aridity which rarely permits surface runoff. In contrast to the situation in arctic regions, slope erosion and solifluction contribute little to the slope morphology. The possible morphological processes involved in soil creep under the special conditions of Victoria Land are presented and discussed. Thermal contraction and expansion caused by the wide temperature fluctuations are demonstrated by the widespread occurrence of polygons and by "inner rock polygons" within rock fragments. Movements are also initiated in the cover of fine materials by the crystallization of both ice and salt; when gravity is superimposed on these, downslope displacements result. Snow loading and snow thrusting locally reinforce the effects of dry solifluction. The almost universally developed deflation pavements provide proof of the role of eolian transport on the slopes. Only estimates of the rates of soil creep in Victoria Land are possible at present. In general it appears that the aridity of the Dry Valleys is less of an impediment to weathering processes than to slope denudation. (Auth. mod.)

39-726
Isotope and geochemical investigations on the Vavilov Glacier dome, Severnaya Zemlya.
Vaikmäe, R.A., et al, *Polar geography and geology,* Jan.-Mar. 1984, No.8, p.73-79, For Russian original see 37-1673. 11 refs.
Punning, IA.M.K.
Radioactive isotopes, Geochemistry, Glacier ice, Ice cover thickness, Climatic changes.

39-727
Snow control study for Dempster Highway cut at mile 292.5.
Williams, C.J., et al, Edmondton, Alta., July 10, 1978, 3p. + 8 figs., Unpublished manuscript.
Baker, H.A.
Snow removal, Roads, Snowdrifts, Countermeasures, Snow accumulation, Wind factors, Topographic effects, Snow fences.

39-728
Report on meetings on environmental concerns related to offshore oil and gas drilling and production. Volume 1: Report on the national meeting including summaries of the regional meetings.
James F. MacLaren, Ltd., Apr. 1980, 63p., Unpublished manuscript.
Environmental protection, Offshore drilling, Natural resources, Pollution, Canada.

39-729
Progress report on rig site seeding tests in the Mackenzie Delta region, N.W.T.
Younkin, W.E., et al, Calgary, Alta., Northern Engineering Services Company Limited, Mar. 1976, 59p., 10 refs.
Martens, H.E.
Grasses, Growth, Soil texture, Revegetation, Biomass, Temperature effects, Canada—Northwest Territories—Mackenzie River Delta.

39-730
Conference proceedings, Part B.
International Conference on Oil and the Environment, Halifax, Canada, Aug. 16-19, 1982, [Halifax, Canada, 1983], 274p., Refs. passim.
Environmental impact, Offshore drilling, Oil recovery, Economic development, Meetings, Natural resources, Human factors, Legislation.

39-731
Microwave emission from an irregular snow layer.
Eom, H.J., et al, *Remote sensing of environment,* Nov. 1983, 13(5), p.423-437, 21 refs.
Lee, K.K., Fung, A.K.
Snow optics, Snow temperature, Wave propagation, Microwaves, Snow air interface, Remote sensing, Radiometry, Albedo, Boundary layer, Mathematical models, Brightness.

39-732
Rain and ice depolarization measurements at 4 GHz in Sitka, Alaska.
Struharik, S.J., *COMSAT technical review,* Fall 1983, 13(2), p.403-435, 21 refs.
Snow physics, Polarization (waves), Climatic factors, Rain, Attenuation.

39-733
Highway pavement condition inventory in Alaska.
Brawner, A., *Alaska. Dept. of Transportation and Public Facilities. Research notes,* Oct. 1984, 4(4), 2p.
Pavements, Road maintenance, Cold weather construction, United States—Alaska.

39-734
Provision of utilities and services for single-family housing areas. [Rasjonelle grunnarbeider for smahusfelt],
Gunderson, P., *Frost i jord,* Apr. 1984, No.25, p.3-31, In Norwegian with English summary. 13 refs.
Frost protection, Houses, Utilities, Thermal insulation, Water pipes, Sewage, Frost penetration, Rocks, Foundations.

39-735
Foundations for single-family houses. [Smahusfundamentering],
Torgersen, S.E., *Frost i jord,* Apr. 1984, No.25, p.33-49, In Norwegian with English summary. 25 refs.
Cold weather construction, Frost protection, Houses, Foundations, Design, Cost analysis.

39-736
Comparative study of instruments for measuring the liquid water content of snow.
Denoth, A., et al, *Journal of applied physics,* Oct. 1, 1984, 56(7), p.2154-2160, 15 refs.
Snow water content, Unfrozen water content, Measuring instruments, Snow density, Snow electrical properties, Wet snow.

39-737
Beaufort Sea caisson retained island.
Comyn, M., *Canadian petroleum technology,* July-Aug. 1984, 23(4), p.40-44, 2 refs.
Offshore structures, Artificial islands, Ice loads, Caissons, Shear strength, Ocean waves, Design, Platforms, Beaufort Sea.

39-738
Ice management in the Labrador Sea.
Miller, J.D., et al, *Canadian petroleum technology,* July-Aug. 1984, 23(4), p.45-49.
Dillon, M.J.
Ice control, Ice navigation, Ship icing, Ice conditions, Ice detection, Sea ice distribution, Wind factors, Iceberg towing, Offshore drilling, Drift, Labrador Sea.

39-739
Beaufort Sea—new generation drilling system.
Wearing, J.K., *Canadian petroleum technology,* July-Aug. 1984, 23(4), p.50-55.
Offshore drilling, Icebreakers, Equipment, Ice breaking, Caissons, Beaufort Sea.

39-740
Autonomous submersible vehicles in Canadian offshore exploration.
Muirhead, M.J., *Canadian petroleum technology,* July-Aug. 1984, 23(4), p.58-61, 1 ref.
Offshore structures, Exploration, Ice conditions, Submarines.

39-741
Determining frequency and magnitude of river-ice jams and drives from botanical evidence.
Reynolds, D.M., Calgary, Alta., University, May 1976, 84p., Canadian Theses on microfiche, No.28558, M.S. thesis. 30 refs.
Ice jams, Ice mechanics, River ice, Banks (waterways), Trees (plants), Damage, Ice floes, Floods, Seasonal variations.

39-742
Bibliography of ice properties and forecasting related to transportation in ice-covered waters.
Greisman, P.E., *U.S. Coast Guard. Research and Development Center. Report,* Sep. 1980, CGDC-9/80, 187p.
Ice surveys, Icebreakers, Ice forecasting, Ice navigation, Ice mechanics, Bibliographies, Remote sensing, Pressure ridges, Glacial meteorology.

39-743
Nature and extent of acid snowpacks in Pennsylvania.
Dewalle, D.R., et al, Institute for Research on Land and Water Resources. Technical completion report; Project A-054-PA, University Park, Pennsylvania State University, Feb. 1983, 35p., PB83-206 276, 13 refs.
Sharpe W.E., Izbicki, J., Wirries, D.L.
Snow impurities, Snowfall, Hydrogen ion concentration, Rain, Water chemistry, Air pollution, Vegetation factors.

39-744
Growth processes of snow.
Lo, K.K., *U.S. Air Force Geophysics Laboratory. Technical report,* May 1983, AFGL-TR-83-0105, 192p., ADA-133 136, Refs. p.189-192.
Snow crystal growth, Ice crystal growth, Cloud physics, Meteorological data, Precipitation (meteorology), Spectra, Snowstorms, Analysis (mathematics).

39-745
Physical adsorption of hydrocarbon vapors on ice.
Orem, M.W., Los Angeles, University of Southern California, 1969, 115p., University Microfilms order No.70-11,381, Ph.D. thesis. 48 refs.
Ice vapor interface, Adsorption, Hydrocarbons, Natural gas, Ice physics, Thermodynamics, Low temperature tests, Models, Vapor transfer.

39-746
Nonequilibrium crystallization of moisture in frozen soils. [Neravnovesnaia kristallizatsiia vlagi v merzlykh gruntakh],
Nesterov, I.I., et al, *Akademiia nauk SSSR. Doklady,* 1984, 277(4), p.928-932, In Russian. 10 refs.
Danielian, IU.S., IAnitskiĭ, P.A., Galieva, V.N.
Soil freezing, Frost penetration, Soil water migration, Ice formation, Phase transformations, Freeze thaw cycles.

39-747
Evaluating the effectiveness and reliability of the performance of silicon dampers in icebreakers of the "Moskva" type. [Otsenka nadezhnosti i effektivnosti raboty silikonovykh dempferov ledokolov tipa "Moskva"],
Gorbunov, E.IA., *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Trudy,* 1978, Vol.236, p.132-135, In Russian.
Ice navigation, Icebreakers, Diesel engines, Performance.

39-748
Accumulation of deviations, due to errors in correction-signal performance of gyrocompasses in high latitude navigation. [O nakoplenii deviatsiĭ, obuslovlennykh pogreshnostiami vyrabotki signalov korrektsii, v girokursoukazateliakh, ekspluatiruemykh v usloviiakh vysokoshirotnogo plavaniia sudov],
Filin, V.M., *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Trudy,* 1980, Vol.256, p.43-57, In Russian. 3 refs.
Ice navigation, Ships, Icebreakers, Ice breaking, Accuracy, Arctic Ocean.

39-749
Peculiarities of supergene migration of ore elements in cryolithozones. [Ob osobennostiakh gipergennoĭ migratsii rudnykh elementov v kriolitozone],
Vagner, B.B., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Geologiia i razvedka,* July 1987, No.7, p.85-89, In Russian. 16 refs.
Permafrost distribution, Cryogenic soils, Soil water migration, Minerals, Solutions, Phase transformations, Unfrozen water content, Water films, Permafrost structure, Ground ice, Ice composition.

39-750
Large-scale experiment in all-year construction in western Siberia. [Krupnomasshtabnyĭ eksperiment po kruglogodichnomu stroitel'stvu v Zapadnoĭ Sibiri],
Vel'chev, S.P., et al, *Stroitel'stvo truboprovodov,* Sep. 1984, No.9, p.6-8, In Russian.
Mentiukov, V.P.
Gas pipelines, Permafrost control, All terrain vehicles, Permafrost beneath structures, Paludification, Transportation, Construction equipment, Roadbeds, Permafrost hydrology, Embankments.

39-751
Effect of vegetation and soil removal and periodical warming of quarries on temperature regime of ground in the quarries. [Vliianie sniatiia pochvenno-rastitel'nogo pokrova i periodicheskogo utepleniia kar'era na temperaturnyĭ rezhim gruntov kar'era],
Vasil'ev, I.M., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1980, Vol.144, p.20-24, In Russian. 3 refs.
Mel'nikov, V.A., Siniakov, L.N.
Earth dams, Forest soils, Fines, Grasses, Mosses, Soil temperature, Thermal insulation, Permafrost beneath structures, Quarries, Taliks.

39-752
Calculations of preliminary compaction of frozen soils. [Raschety predvaritel'nogo uplotneniia merzlykh gruntov],
Tsybin, A.M., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1980, Vol.144, p.44-51, In Russian. 12 refs.
Gorelik, L.V.
Foundations, Active layer, Permafrost beneath structures, Soil compaction, Houses, Frozen ground, Design.

39-753
Calculation of inclined drainage of dams under severe northern conditions. [O raschete naslonnogo drenazha damb v surovykh severnykh usloviiakh],
Moshkova, M.A., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia, 1980, Vol.144, p.52-55, In Russian.*
Tsybin, A.M., Fedorova, V.V.
Earth dams, Drainage, Embankments, Slope stability, Fines, Clays, Sands, Loams, Thermal insulation, Frost penetration, Stefan problem.

39-754
Sea and ocean level fluctuations for 15,000 years. [Kolebaniia urovnia morei i okeanov za 15,000 let],
Kaplin, P.A., ed, Moscow, Nauka, 1982, 230p., In Russian. For selected papers see 39-755 through 39-758 or F-30744, J-30742, and J-30743. Refs. passim.
Klige, R.K., ed, Chepalyga, A.L., ed.
Ocean environments, Sea ice distribution, Coastal topographic features, Ice shelves, Land ice, Subsea permafrost, Drill core analysis, Shore erosion, Thermokarst, Alassy, Shoreline modification, Antarctica—Ross Ice Shelf, Arctic Ocean.
This collection of articles deals with late and postglacial sea level fluctuations. Both general causes and local characteristics of sea level changes are considered.

39-755
Studies of ocean level fluctuations during postglacial time. [Problemy izucheniia kolebaniĭ urovnia okeana v poslelednikovoe vremia],
Kaplin, P.A., Kolebaniia urovnia morei i okeanov za 15,000 let. (Sea and ocean level fluctuations for 15,000 years). Edited by P.A. Kaplin, R.K. Klige, and A.L. Chepalyga, Moscow, Nauka, 1982, p.6-11, In Russian. 7 refs.
Climatic factors, Sea level, Ice sheets.
Ocean level fluctuations during postglacial time are studied in relation to economic development of coastal areas. Theories and new models of the world ocean level are offered for the development of postglacial transgression. References to Antarctica, concerning the position of the western part of the ice sheet, imply sinking of the continental surface below sea level. The low hypsometric level of the surface reflects the initial position of dry land rather than isostatic ice loads. Under such conditions of ice-edge instability, its break off the main mass and rapid deterioration is possible, and due to atmospheric temperature and composition, this may occur during the next 50 years, causing general elevation of the world ocean level. Possibilities of rapid "surges" of large ice masses were substantiated, their causes are discussed, including sudden equilibrium upsets at the ice sheet edge at certain values of the rate of ice flow, friction, ice cover thickness and the form of the sheet.

39-756
Antarctic and Greenland ice sheet influence on the level of the world ocean (a numerical experiment). [Vliianie antarkticheskogo i grenlandskogo lednikovykh shchitov na uroven' Mirovogo okeana (chislennyĭ eksperiment)],
Verbitskiĭ, M.IA., Kolebaniia urovnia morei i okeanov za 15,000 let. (Sea and ocean level fluctuations for 15,000 years). Edited by P.A. Kaplin, R.K. Klige, and A.L. Chepalyga, Moscow, Nauka, 1982, p.120-124, In Russian. 12 refs.
DLC GC89.K63
Sea level, Glacier melting, Climatic factors, Ice melting, Ice sheets.
Based on analysis of a three-dimensional thermohydrodynamic ice-sheet model, quantitative estimates of sea level changes due to warming of climate are presented. Oxygen isotope data from 15 to 20 thousand year old ice, showing a 5 deg decrease of temperature in Antarctica, also show a decrease of precipitation rate by a factor of 1.9. Tabulated data show the relationship between temperature and the increase of precipitation to be 14% to 1 deg C. Significant destruction of the ice sheet would begin only if temperatures were to increase by 10-12 deg. The maximum sea level rise in such an event would be 60 m.

39-757
Origin of "inundated shore lines" of glaciated North Atlantic shelves. [O proiskhozhdenii "zatoplennykh beregovykh linii" gliatsial'nykh shel'fov severnoĭ Atlantiki],
Grosval'd, M.G., Kolebaniia urovnia morei i okeanov za 15,000 let. (Sea and ocean level fluctuations for 15,000 years). Edited by P.A. Kaplin, R.K. Klige, and A.L. Chepalyga, Moscow, Nauka, 1982, p.125-133, In Russian. 37 refs.
Ocean environments, Coastal topographic features, Terraces, Ice shelves, Moraines, Origin, Land ice, Subsea permafrost, Drill core analysis, Antarctica—Ross Ice Shelf.
Recent processes, developing at the boundary between the West Antarctic ice sheet and the floating ice of the Ross Shelf, threw some light on the origin of glacial terraces in the northern Atlantic, which were formed in underwater-subglacial conditions, rather than at sea level, at the overlap-stabilization borders of the "marine" ice sheets. The mechanism of the formation of inundated glacial coastal terraces is described, illustrated and discussed.

39-758
Coastal structure of the western part of the East Siberian sea. [O stroenii poberezh'ia zapadnoĭ chasti *Vostochno-Sibirskogo moria*],
Bashlavin, D.K., et al, Kolebaniia urovnia morei i okeanov za 15,000 let. (Sea and ocean level fluctuations for 15,000 years). Edited by P.A. Kaplin, R.K. Klige, and A.L. Chepalyga, Moscow, Nauka, 1982, p.174-178, In Russian. 4 refs.
Ovander, M.G.
Coastal topographic features, Permafrost distribution, Permafrost structure, Plains, Thermokarst, Alassy, Shore erosion, Hydrothermal processes, Shoreline modification, Ground ice, Arctic Ocean.

39-759
Tropical glaciers: potential for ice core paleoclimatic reconstructions.
Thompson, L.G., et al, *Journal of geophysical research,* June 20, 1984, 81(7), p.4638-4646, 33 refs.
Mosley-Thompson, E., Grootes, P.M., Pourchet, M., Hastenrath, S.
Glacier surveys, Paleoclimatology, Ice cores, Ice composition, Impurities, Climatic changes.

39-760
Model of oxygen isotope composition of precipitation: implications for paleoclimate data.
Covey, C., et al, *Journal of geophysical research,* June 20, 1984, 81(7), p.4647-4655, 37 refs.
Haagenson, P.L.
Snow composition, Oxygen isotopes, Paleoclimatology, Ice sheets, Precipitation (meteorology), Marine deposits, Models, Meteorological data.

39-761
Remote sensing of weather and climate parameters from HIRS2/MSU on TIROS-N.
Susskind, J., et al, *Journal of geophysical research,* June 20, 1984, 81(7), p.4677-4697, 35 refs.
Rosenfield, J., Reuter, D.
Ice cover, Snow cover distribution, Remote sensing, Weather observations, Climate, Sea water, Surface temperature, Cloud cover, Solar radiation, Analysis (mathematics).

39-762
On the determinants of the near surface temperature regime on the South Polar Plateau.
Carroll, J.J., *Journal of geophysical research,* June 20, 1984, 81(7), p.4941-4952, 23 refs.
Snow air interface, Surface energy, Solar radiation, Snow temperature, Heat balance, Surface temperature, Radiation balance, Cloud cover, Latent heat, Snow surface, Thermodynamics, Wind velocity, Slope orientation.
Most studies of the physical climatology of the Antarctic interior focus on the local surface energy budget. The results of these studies are reviewed leading to the often cited conclusion that atmospheric heat transport is required from lower latitudes to maintain the temperature against the large radiative losses by the snow-atmosphere system of the interior plateau. Micrometeorological data taken over a 3 year period at the South Pole are presented, illustrating the annual cycle of the surface energy budget. In addition, these data, coupled with local 500 mb data, are used to examine the role of vertical and horizontal transport mechaniams in determining the near-surface temperature variations. In addition to the radiation budget, downward mixing through the boundary layer and transient horizontal advection appear far more important than local divergence or convergence effects in determining the local temperature.

39-763
Comments on "Theory of metamorphism of dry snow" by S.C. Colbeck.
Sommerfeld, R.A., *Journal of geophysical research, June 20, 1984, 81(7), MP 1800,* p.4963-4965, Includes reply by S.C. Colbeck. 9 refs. For the original article see 37-3571.
Colbeck, S.C.
Metamorphism (snow), Snow crystal growth, Ice crystal growth, Temperature gradients, Vapor diffusion, Analysis (mathematics).

39-764
Rock glaciers in northern Spitsbergen: a discussion.
Humlum, O., *Journal of geology,* Mar. 1982, 90(2), p.214-218, Includes a reply by M.J. Hambrey and K. Swett. 19 refs. For the original article see 36-1555.
Hambrey, M.J., Swett, K.
Rock glaciers, Glacier mass balance, Glacier flow, Norway—Spitsbergen.

39-765
Mobilization, movement and deposition of active subaerial sediment flows, Matanuska Glacier, Alaska.
Lawson, D.E., *Journal of geology,* May 1982, 90(3), MP 1806, p.279-300, 50 refs.
Sediment transport, Glacial deposits, Glacier ablation, Glacier melting, Glacial geology, Glacier surfaces, Meltwater, United States—Alaska—Matanuska Glacier.
Subaerial sediment flow is the predominant process depositing diamictons at the terminus of Matanuska Glacier. Flows originate where sediments overlie glacier ice. Ablation of ice exposed in slopes disaggregates the overlying sediment and mixes it with meltwater and debris released simultaneously. This material generally flows only after its strength is further reduced by excess pore pressures and seepage pressures generated by meltwater from thawing ice. Moving sediment flows show reasonably systematic changes in physical attributes such as dimensions, texture, flow rates, density and erosional action, and in grain support and transport mechanisms that can be related to changes in the water content of their matrix material. At lowest water contents, flows support grains by their strength and move through shear in a thin zone at their base. Increased thicknesses of the zone in shear and deformation of other types accompany increased water contents, with grain interference and collisions, localized liquefaction and fluidization, transient turbulence, and bedload traction and saltation operating simultaneously in such moving flows. At highest water contents, flows appear fully liquefied. The fluidity of the sediment flow and the amount of water in the sediment flow channel determine the degree of preservation of the source flow's properties and the depositional morphology. Because mobilization of a sediment flow destroys the glacial sedimentary properties of its sediment source and, further, because the mechanics of transport and deposition develop new "non-

glacial" properties in this sediment, the diamicton deposited in the glacial environment by sediment flow should not be called till.

39-766
Subglacial volcanism in north-central British Columbia and Iceland.
Allen, C.C., et al, *Journal of geology*, Nov. 1982, 90(6), p.699-715, Refs. p.714-715.
Jercinovic, J., Allen, J.S.B.
Subglacial observations, Glacial lakes, Volcanoes, Geomorphology, Origin, Canada—British Columbia, Iceland.

39-767
Heat capacity of water near solid surfaces.
Vučelić, V., et al, *Chemical physics letters*, Nov. 25, 1983, 102(4), p.371-374, 11 refs.
Vučelić, D.
Ice solid interface, Liquid solid interfaces, Heat capacity, Water temperature, Specific heat, Surface properties.

39-768
Living snowfence.
Koehimoos, L.A., *Journal of soil and water conservation*, Jan.-Feb. 1983, 38(1), p.23-24.
Snow fences, Protective vegetation, Trees (plants), Snowdrifts, Road maintenance, Windbreaks.

39-769
Soil erosion on subarctic forest slopes.
Aldrich, J.W., et al, *Journal of soil and water conservation*, Mar.-Apr. 1983, 38(2), p.115-118, 18 refs.
Slaughter, C.W.
Soil erosion, Forest land, Meltwater, Slope processes, Vegetation factors, Snowmelt, Rain, United States—Alaska—Fairbanks.

39-770
Road maintenance equipment in equipment fleets. [Le matériel d'entretien des routes des parcs de l'équipment],
Nuty, A., *Travaux*, June 1983, No.578, p.15-28, In French with English, German, Spanish and Portuguese summaries.
Snow removal, Road maintenance, Equipment, Sanding, Salting.

39-771
Design of reinforced concrete engineering structures for thermal stresses. [Raschet zhelezobetonnykh inzhenernykh sooruzheniĭ na temperaturnye vozdeĭstviia],
Krichevskiĭ, A.P., Moscow, Strolizdat, 1984, 149p., In Russian with English table of contents enclosed. 95 refs.
Concrete structures, Reinforced concretes, Frost action, Humidity, Thermal stresses, Fracturing, Concrete strength, Settlement (structural).

39-772
Glossary of Russian ice terms. Washington, D.C., U.S. Naval Intelligence Support Center, Translation Division, Dec. 1984, 78p., NISC No.7643, In Russian and English. 4 refs.
Ice, Terminology, Snow, Geocryology, Permafrost, Dictionaries, Tundra, Ice water interface, Meteorology.

39-773
Vane shear strength of snow. 1. Effect of vane angular velocity.
Kuriyama, H., *Seppyo*, Sep. 1984, 46(3), p.101-108, In Japanese with English summary. 10 refs.
Snow strength, Shear strength, Snow density, Tests, Velocity.

39-774
Experimental studies of heat budget of very thin sea ice.
Ishikawa, N., et al, *Seppyo*, Sep. 1984, 46(3), p.109-119, In Japanese with English summary. 24 refs.
Kobayashi, S.
Ice thermal properties, Sea ice, Heat balance, Radiation balance, Ice temperature, Air temperature, Experimentation, Ice heat flux, Ice growth, Surface temperature.

39-775
Hydraulic conveying of snow. Separation of foreign solids from snow-water mixture by cyclone.
Umemura, T., et al, *Seppyo*, Sep. 1984, 46(3), p.121-128, In Japanese with English summary. 6 refs.
Koyanagi, T., Okada, A.
Snow impurities, Solids, Equipment, Countermeasures, Water pipelines, Flow rate, Purification.

39-776
Need for and problems connected with measures for protection from snow-avalanche damage in the Hokuriku region.
Kurashima, O., *Seppyo*, Sep. 1984, 46(3), p.129-138, In Japanese with English summary. 8 refs.
Avalanche engineering, Avalanche formation, Damage, Countermeasures, Protection, Mountains, Snowfall.

39-777
Fifteen-years experience for instruments development.
Kimura, T., *Seppyo*, Sep. 1984, 46(3), p.139-142, In Japanese. 26 refs.
Snow surveys, Instruments.

39-778
Report of National Committee on Snow and Ice. *Seppyo*, Sep. 1984, 46(3), p.143-146, In Japanese.
Snow surveys, Ice surveys, Research projects.

39-779
Snow reflectance from LANDSAT-4 thematic mapper.
Dozier, J., *IEEE transactions on geoscience and remote sensing*, May 1984, GE-22(3), p.323-328, 18 refs.
Snow optics, Albedo, Remote sensing, Snowmelt, Runoff forecasting, Water supply, Spectra, Mapping, LANDSAT.

39-780
Canada's last great ice sheet.
Dyke, A.S., et al, *Geos*, Fall 1983, 12(4), p.6-8.
Dredge, L.A., Vincent, J.S.
Ice sheets, Glaciation, Paleoclimatology, Ice cover, Distribution, Models, Canada.

39-781
Glaciers of Bylot Island: a window on the past. [Les glaciers de l'île Bylot: une fenêtre sur le passé],
Bélanger, J.R., et al, *Geos*, Fall 1983, 12(4), p.10-13, In French.
Klassen, R.A.
Glacier surveys, Glacial deposits, Moraines, Paleoclimatology, Stratigraphy, Canada—Northwest Territories—Bylot Island.

39-782
Boundary-layer model of pattern formation in solidification.
Ben-Jacob, E., et al, *Physical review A: general physics*, Jan. 1984, 29(1), p.330-340, 17 refs.
Goldenfeld, N., Langer, J.S., Schön, G.
Crystal growth, Boundary layer, Liquid solid interfaces, Snowflakes, Solid phases, Ice crystal replicas, Thermal properties, Dendritic ice, Mathematical models.

39-783
Limitations on seasonal snowmelt forecast accuracy.
Lettenmaier, D.P., *Journal of water resources planning and management*, July 1984, 110(3), p.255-269, 18 refs.
Snowmelt, Runoff forecasting, Watersheds, Seasonal variations, Mountains, Accuracy.

39-784
Ice-related flood damage estimation.
Yoe, C.E., *Journal of water resources planning and management*, Apr. 1984, 110(2), p.141-152, 19 refs.
Ice jams, Environmental impact, Floods, Damage, Seasonal variations, Countermeasures.

39-785
Flood-plain delineation in ice jam prone regions.
Vogel, R.M., et al, *Journal of water resources planning and management*, Apr. 1984, 110(2), p.206-219, 33 refs.
Stedinger, J.R.
Ice jams, Floods, Hydrology, Ice cover, Distribution, Seasonal variations, Models.

39-786
Current state and trends in antarctic glaciological research. [Zu Stand und Tendenzen der glaziologischen Forschungsarbeiten in der Antarktis],
Kahmann, B., *Geodätische und geophysikalische Veröffentlichungen, Reihe I*, 1983, No.9, Symposium zur Antarktisforschung der DDR, Garwitz 1982, p.52-57, In German with English and German summaries. 18 refs.
Research projects, Ice.
The essential research activities of the SCAR nations are listed in a short general review. From the situation and trends of the glaciological activities in Antarctica in the period from 1979 to 1982 proposals are deduced for glaciological projects for the next years. (Auth.)

39-787
Results of geodetic-glaciological work of a GDR party of the 23rd SAE on Hays Glacier in Enderby Land. [Ergebnisse der geodätisch-glaziologischen Arbeiten einer DDR-Gruppe der 23. Sowjetischen Antarktisexpedition (SAE) am Hays-Gletscher, Enderby-Land],
Reppchen, G., *Geodätische und geophysikalische Veröffentlichungen, Reihe I*, 1983, No.9, Symposium zur Antarktisforschung der DDR, Garwitz 1982, p.58-62, In German with English and Russian summaries.
Glacier melting, Glacier mass balance, Glacier flow, Ice cover thickness, Research projects, Antarctica—Hays Glacier.
Since 1972 GDR scientists carried out geodetic-glaciological measurements at Hays Glacier, near the Soviet main station Molodezhnaya. The principal results are as follows. Among the glaciers and ice caps of the West Enderby Land drainage basin (area 20,000 sq km), the Hays Glacier forms the most important local drainage basin with about 10,000 sq km. The length of the glacier is estimated to be about 200-250 km. The maximum width is 60 km. The thickness of the ice varies between 500 m (front line) and 2000 m (inland). The velocity, being constant in time, increases steadily from the inland towards the coast. The snow surface at fixed points and the specific mass budgets are in a steady state along the Hays traverse. (Auth.)

39-788
C-14 dating of plants and penguin guano in the region around Molodezhnaya (Antarctica) and glaciological implications. [C-14-Datierung von Pflanzen und Pinguinguano aus dem Gebiet von Molodeshnaja (Antarktika) und daraus ableitbare glaziologische Aussagen],
Hebert, D., *Geodätische und geophysikalische Veröffentlichungen, Reihe I*, 1983, No.9, Symposium zur Antarktisforschung der DDR, Garwitz 1982, p.64-73, In German with English and Russian summaries. 24 refs.
Radioactive age determination, Plants (botany), Ice cover, Snow cover, Guano, Antarctica—Molodezhnaya Station.
During the antarctic summers 1975/76 and 1977/78 samples of snow, ice, plants, guano and air-CO2 were collected near Molodezhnaya Station. Within the investigations of the natural radioactivity the content of environmental isotopes (e.g. tritium, deuterium, oxygen-18, carbon-13, carbon-14) of these samples was measured. Glaciological implications of the results are discussed. The recent rate of coastal uplift of Enderby Land is concluded to be 3 centimeters per year. (Auth.)

39-789
Polar clothing from a thermophysiological viewpoint. [Polarbekleidung unter thermophysiologischem Gesichtspunkt],
Schrader, G., *Geodätische und geophysikalische Veröffentlichungen, Reihe I*, 1983, No.9, Symposium zur Antarktisforschung der DDR, Garwitz 1982, p.103-106, In German with English and Russian summaries. 14 refs.
Cold weather survival, Clothing.
Emphasis is given to the importance of clothing for thermoregulation of the human body in cold climates. Aetiology, symptoms and genesis were investigated in detail in relation to local damage done by the cold. The demands are shown which are asked of polar clothing. Problems of humidity under the clothing and its removal are noted. This article is intended to alert members of expeditions to the dangers in cold climates and to show possibilities for avoiding them. (Auth. mod.)

39-790
Ukrainian construction workers to the working people of Tyumen'. [Ukrainskie stroiteli—truzhenikam Tiumeni],
Gusev, V.A., *Zhilishchnoe stroitel'stvo*, May 1984, No.5, p.7-9, In Russian.
Pipelines, Paludification, Houses, Residential buildings, Taiga, Permafrost distribution, Petroleum industry, Architecture.

39-791
Microclimate of modular buildings. [Mikroklimat inventarnykh zdaniĭ],
Kazantsev, I.A., et al, *Zhilishchnoe stroitel'stvo*, May 1984, No.5, p.12, In Russian.
Gavrilova, O.E., Boshniakovich, L.T.
Modular construction, Permafrost beneath structures, Microclimatology, Walls, Floors, Heat transfer, Transportation, Residential buildings.

39-792
Influence of external finishing on thermal insulation properties of walls made of shungite-cellular concretes. [Vliianie naruzhnykh otdelok na teplozashchitnye kachestva sten iz shungizitogazobetona],
IAsin, IU.D., et al, *Zhilishchnoe stroitel'stvo*, May 1984, No.5, p.15-16, In Russian.
Kuznetsova, N.N., Sil'vestrov, A.L.
Walls, Microclimatology, Lightweight concretes, Concrete aggregates, Permafrost beneath structures, Gravel, Buildings, Heat loss, Heat transfer.

39-793
External walls built of three-layer panels with elastic joints for the IUzhno-Sakhalinsk. [Naruzhnye steny iz trekhsloĭnykh paneleĭ s gibkimi sviazami dlia IUzhno-Sakhalinska],
Tsimbler, V.G., et al, *Zhilishchnoe stroitel'stvo*, May 1984, No.5, p.24-25, In Russian.
Dragilev, I.I., Deshko, G.V., Zavelev, V.G.
Walls, Prefabrication, Panels, Large panel buildings, Buildings, Earthquakes, Seasonal freeze thaw, Freeze thaw cycles.

39-794
Using the magnetic-pulse method of restoring the friability of peat frozen during transportation. [Magnitno-impul'snyĭ sposob vosstanovleniia sypuchesti smerzshegosia pri transportirovke torfa],
Lishtvan, I.I., et al, *Torfianaia promyshlennost'*, Mar. 1984, No.3, p.8-10, In Russian. 4 refs.
Davidovskiĭ, P.N., Tanovitskiĭ, V.I.
Peat, Transportation, Frozen cargo, Countermeasures, Unloading, Ice removal.

39-795
Military operations beyond the Polar Circle. [Boevye deĭstviia v Zapoliar'e],
Lobov, V., *Voennyĭ vestnik*, July 1984, No.7, p.18-22, In Russian.
Military operation, Military facilities, Military equipment, Charts, Subarctic landscapes.

39-796
Microflora of litter in pine forests of northern Transbaikal. [Mikroflora podstilok v khvoĭnykh lesakh Severnogo Zabaĭkal'ia],
Makarova, A.P., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Nauchnye doklady vysshei shkoly. Biologicheskie nauki*, 1984, No.4, p.94-97, In Russian with English summary. 7 refs.
Naprasnikova, E.V.
Forest soils, Plant ecology, Cryogenic soils, Soil microbiology, Fungi, Biomass, Litter. Taiga, Ecosystems, Permafrost distribution.

39-797
Productivity of tundra phytocoenoses in the vicinity of Cape Kharasavey. [O produktivnosti tundrovykh fitotsenozov okrestnosteĭ mysa Kharasaveĭ],
Vil'chek, G.E., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Nauchnye doklady vysshei shkoly. Biologicheskie nauki*, 1984, No.7, p.67-71, In Russian with English summary. 12 refs.
Biomass, Plant ecology, Tundra, Ecosystems, Subarctic landscapes, Cryogenic soils, USSR—Yamal Peninsula, USSR—Kharasavey Cape.

39-798
Possibility of controlling the work of "hot" pipelines during periods of seasonal underloading. [O vozmozhnosti regulirovaniia raboty "goriachego" truboprovoda v periody sezonnoĭ nedogruzki],
Garris, N.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Neft' i gaz*, Mar. 1984, No.3, p.53-55, In Russian. 4 refs.
Hot oil lines, Cold weather operation.

39-799
Air-cushion belt conveyor equipped with a cargo-carrying unit. [Lentochnyĭ konveĭer s gruzonesushchim organom na vozdushnoĭ podushke],
Aralkin, A.S., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Gornyĭ zhurnal*, 1984, No.3, p.67-71, In Russian. 5 refs.
Mining, Air cushion vehicles, Transportation, Belt conveyors.

39-800
Predicting optimal service life of quarry excavators under conditions of the North. [Prognozirovanie optimal'nykh srokov sluzhby kar'ernykh ekskavatorov v usloviiakh Severa],
Makhno, D.E., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Gornyĭ zhurnal*, 1984, No.3, p.92-95, In Russian. 3 refs.
Meĭerov, B.M., Krakovskaia, L.I.
Mining, Earthwork, Excavation, Equipment, Cold weather operation, Frost effect, Permafrost.

39-801
Sustained strength of peat at subzero temperatures. [Dlitel'naia prochnost' torfa pri otritsatel'nykh temperaturakh],
Lishtvan, I.I., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Gornyĭ zhurnal*, 1984, No.4, p.13-16, In Russian. 7 refs.
Romanenko, I.I., Davidovskiĭ, P.P.
Swamps, Frozen ground strength, Organic soils, Peat, Frost penetration, Frozen ground physics, Frozen ground temperature.

39-802
Forecasting water temperature decline and freeze-up in rivers.
Shen, H.T., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1984, CR 84-19, 17p., ADA-147 068, 14 refs.
Foltyn, E.P., Daly, S.F.
Ice formation, River ice, Water temperature, Freeze-up, Long range forecasting, Computer programs.
In this study a method for making long-range forecasts of freeze-up dates in rivers is developed. The method requires the initial water temperature at an upstream station, the long-range air temperature forecast, the predicted mean flow velocity in the river reach, and water temperature response parameters. The water temperature response parameters can be either estimated from the surface heat exchange coefficient and the average flow depth or determined empirically from recorded air and water temperature data. The method is applied to the St. Lawrence River between Kingston, Ontario, and Massena, New York, and is shown to be capable of accurately forecasting freeze-up.

39-803
Pulse transmission through frozen silt.
Arcone, S.A., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1984, CR 84-17, 9p., ADA-147 108, 19 refs.
Frozen ground physics, Radio waves, Wave propagation, Permafrost physics, Radar, Temperature effects.
VHF-band radiowave short pulses were transmitted within the permafrost tunnel at Fox, Alaska, over distances between 2.2 and 10.5 m. The propagation medium was a frozen silt containing both disseminated and massive ice with temperatures varying from -7C near the transmitter to probably -2C near the center of the tunnel overburden. The short pulses underwent practically no dispersion in the coldest zones but did disperse and refract through the warmer overburden, as suggested by calculations of the effective dielectric constant. Most significantly the measured frequency content decreased as the effective dielectric constant increased. The results indicate that deep, cross-borehole pulse transmissions over distances greater than 10 m might be possible, especially when the ground is no warmer than -4C. The information thus gained could be used for identifying major subsurface variations, including ground ice features.

39-804
Effects of low temperatures on the growth and unfrozen water content of an aquatic plant.
Palazzo, A.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1984, CR 84-14, 8p., ADA-147 107, 24 refs.
Tice, A.R., *Oliphant, J.L., Graham, J.M.*
Plant tissues, Temperature effects, Unfrozen water content, Cold tolerance, Low temperature tests, Growth, Damage, Nuclar magnetic resonance, Aquatic plants.
Two laboratory studies were performed to investigate the effects of low temperatures on the aquatic plant *Ceratophyllum dimersum* L. Whole plants were subjected to low-temperature treatments of +4, 0 and -6C for 48 hours, and regrowth was compared to an untreated control. The control and +4C-treated plants gained weight, while visible injury and reductions in plant biomass were noted 30 days after treatment at the two lower temperatures. The -6C treatment killed the plants, while the 0C treatment injured them to some degree. In another phase of this study, nuclear magnetic resonance (NMR) analysis of plant buds, leaves and stems showed that lowering temperatures caused the plants' unfrozen water content to drop rapidly as the temperature approached -5C, then slowly as temperatures approached -13C. From -13C to -22C there was little change in unfrozen water content. The results show that ice in this plant causes injury that affects subsequent regrowth; temperatures of -6C or below can actually kill them. This killing temperature was also near the point where frozen water content increased only slightly with lower temperatures. NMR analysis could be one way of determining plant tolerance to cold. It appears from this study that this weedy species is susceptible to low-temperature injury, and subjecting this plant to cold may be a promising method of weed control in northern lakes.

39-805
Water and aqueous solutions: structure, thermodynamics, and transport processes.
Horne, R.A., ed, New York, John Wiley & Sons, 1972, 837p., Refs. passim. For selected papers see 39-806 through 39-809.
Ice physics, Water, Solutions, Ice water interface, Molecular structure, Sea water, Temperature effects, Thermodynamics, Water transport.

39-806
Structure of the ices.
Kamb, B., Water and aqueous solutions: structure, thermodynamics, and transport processes. Edited by R.A. Horne, New York, John Wiley & Sons, 1972, p.9-24, 28 refs.
Ice structure, High pressure ice, Molecular structure, Phase transformations, Solid phases.

39-807
Transport properties of ice.
Jaccard, C., Water and aqueous solutions: structure, thermodynamics, and transport processes. Edited by R.A. Horne, New York, John Wiley & Sons, 1972, p.25-64, Refs. p.62-64.
Ice electrical properties, Ice physics, Ice mechanics, Ice structure, Hydrogen bonds, Molecular structure, Electrical resistivity, X ray diffraction, Neutron diffraction, Mass transfer, Solutions, Defects, Plastic deformation.

39-808
Ice interface.
Jellinek, H.H.G., Water and aqueous solutions: structure, thermodynamics, and transport processes. Edited by R.A. Horne, New York, John Wiley & Sons, 1972, p.65-107, 85 refs.
Ice solid interface, Ice water interface, Ice adhesion, Ice strength, Stresses, Interfaces, Ice surface, Ice growth, Temperature effects, Time factor, Diffusion, Freezing points.

39-809
Seawater.
Park, P.K., Water and aqueous solutions: structure, thermodynamics, and transport processes. Edited by R.A. Horne, New York, John Wiley & Sons, 1972, p.245-264, Refs. p.262-264.
Sea water, Water temperature, Thermodynamics, Water chemistry, Water structure, Thermal properties, Viscosity.

39-810
Concrete from crushed Jurassic limestone.
Collins, R.J., *Quarry management and products*, Mar. 1983, 10(3), p.127-138, 13 refs.
Concrete strength, Freeze thaw tests, Concrete freezing, Concrete aggregates, Compressive properties, Absorption.

39-811
Canadian Arctic marine technology R&D program: a review.
Glen, I.F., *Marine technology*, July 1984, 21(3), p.242-255, 33 refs.
Marine transportation, Ice navigation, Ice conditions, Ice pressure, Sea ice distribution, Tanker ships, Design.

39-812
Concrete structure designed for Arctic. *Offshore*, Aug. 1984, 44(9), p.92-94, 1 ref.
Offshore structures, Artificial islands, Ice loads, Concrete structures, Gravel, Ocean bottom, Beaufort Sea.

39-813
Piling aids gravity in ice resistance.
Bea, R.G., et al, *Offshore*, Aug. 1984, 44(9), p.99-100.
Offshore structures, Ice loads, Piles, Foundations, Ice strength, Ocean bottom, Soil strength.

39-814
Concrete mix strengthens Arctic seabed. *Offshore*, Aug. 1984, 44(9), p.102-105, 1 ref.
Offshore structures, Concrete structures, Concrete strength, Ocean bottom, Soil strength, Foundations, Concrete admixtures, Soil cement, Beaufort Sea.

39-815
Nimbus-7 SMMR polarization responses to snow depth in the mid-western U.S.
Hall, D.K., et al, *Nordic hydrology*, 1984, 15(1), p.1-8, 8 refs.
Foster, J.L., Chang, A.T.C.
Snow depth, Remote sensing, Microwaves, Radiometry, Snow cover structure.

39-816
Hydrological data-model work in Greenland.
Thomsen, T., et al, *Nordic hydrology*, 1984, 15(1), p.39-56, 7 refs.
Jörgensen, G.H.
Glacial hydrology, Runoff, Meltwater, Ablation, Drainage, Snow accumulation, Precipitation (meteorology), Greenland.

39-817
Computer-aided pressuremeter tests.
Law, K.T., *Geotechnical testing journal*, June 1984, 7(2), p.99-103, 18 refs.
Soil pressure, Measuring instruments, Boreholes, Stress strain diagrams, Computer applications.

39-818
Direction of ice-wedge cracking in permafrost: downward or upward.
Mackay, J.R., *Canadian journal of earth sciences,* May 1984, 21(5), p.516-524, With French summary. 26 refs.
Ice wedges, Permafrost physics, Ice cracks, Permafrost thermal properties, Polygonal topography.

39-819
Structure of D2O ice VIII from in situ powder neutron diffraction.
Jorgensen, J.D., et al, *Journal of chemical physics,* Oct. 1, 1984, 81(7), p.3211-3214, 29 refs.
Beyerlein, R.A., Watanabe, N., Worlton, T.G.
High pressure ice, Ice crystal structure, Molecular structure, Deuterium oxide ice, Heavy water, Neutron diffraction, Dielectric properties.

39-820
FT-IR investigation of proton transfer in irradiated ice at 90K in the absence of mobile bjerrum defects.
Devlin, J.P., et al, *Journal of chemical physics,* Oct. 1, 1984, 81(7), p.3250-3255, 15 refs.
Richardson, H.H.
Ice crystal structure, Proton transport, Low temperature research, Radiation absorption, Heavy water, Spectra.

39-821
Phytoplankton structure as an index of thermal eutrophy of cooling ponds of the Baraba State Regional Electric Power Plant. [Struktura fitoplanktona kak pokazatel' teplovogo evtrofirovaniia prudov-okhladitelei Barabinskoĭ GRES],
Kuksn, M.S., *Zapadno-Sibirskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1984, Vol.62, p.19-31, In Russian. 24 refs.
Icebound lakes, Photosynthesis, Ponds, Plankton, Algae, Transpiration, Nutrient cycle, Polynyas, Plant ecology, Electric power, Ecosystems, Solar radiation.

39-822
Improving the quality and speed of shaft sinking by preliminary artificial freezing of ground. [Uluchshat' kachestvo i povyshat' skorost' prokhodki shakhtnykh stvolov sposobom predvaritel'nogo zamorazhivaniia porod],
Shparber, P.A., *Shakhtnoe stroitel'stvo,* May 1984, No.5, p.6-8, In Russian.
Shaft sinking, Artificial freezing, Construction equipment, Frost penetration, Mine shafts, Ground water, Drainage.

39-823
Using liquid nitrogen in artificial freezing of rocks when sinking mine shafts. [O primenenii zhidkogo azota dlia zamorazhivaniia porod pri sooruzhenii ust'ia stvola],
Vial'tsev, M.M., et al, *Shakhtnoe stroitel'stvo,* Apr. 1984, No.4, p.21-22, In Russian.
Agishev, V.V.
Shaft sinking, Artificial freezing, Construction equipment, Construction materials, Liquefied gases, Drainage, Mine shafts.

39-824
Regularities governing the increase of load on shaft timbering when using artificial freezing of rocks. [Zakonomernosti formirovaniia nagruzok na krep' stvola sooruzhaemogo s primeneniem zamorazhivaniia porod],
Kazikaev, D.M., et al, *Shakhtnoe stroitel'stvo,* Mar. 1984, No.3, p.11-13, In Russian. 5 refs.
Borisov, O.P., Sergeev, S.V.
Mine shafts, Shaft sinking, Supports, Artificial freezing, Water table, Frost heave, Frozen fines, Clays.

39-825
Structural properties of aerated ash concretes in the construction of enclosures in the Far North. [Ekspluatatsionnye svoĭstva gazozolobetona v ograzhdaiushchikh konstruktsiiakh na Kraĭnem Severe],
Zlatinskaia, T.V., et al, *Stroitel'nye materialy,* May 1984, No.5, p.11-12, In Russian. 1 ref.
Dikun, A.D.
Winter concreting, Concrete structures, Permafrost beneath structures, Lightweight concretes, Frost resistance, Concrete freezing, Concrete hardening, Concrete strength, Freeze thaw cycles.

39-826
KO-705SL ice-shearing equipment. [L'doskalyvatel' KO-705SL],
Zuev, G.IA., et al, *Stroitel'nye i dorozhnye mashiny,* Aug. 1984, No.8, p.16-17, In Russian.
Khrapov, IU.G.
Winter maintenance, Municipal engineering, Snow removal, Ice removal, Roads, Glaze, Sidewalks.

39-827
DE-210A snowplow. [Snegoochistitel' DE-210A],
Kasinov, B.N., et al, *Stroitel'nye i dorozhnye mashiny,* July 1984, No.7, p.21, In Russian.
Luchkin, O.V.
Runways, Snow removal, Airports, Aircraft landing areas, Snowdrifts, Snow cover distribution.

39-828
Mechanical removal of snow-ice formations on roads and sidewalks. [Mekhanizatsiia udaleniia snezhnoledianykh obrazovaniĭ na dorogakh i trotuarakh],
Stroitel'nye i dorozhnye mashiny, July 1984, No.7, p.23, In Russian.
Sidewalks, Winter maintenance, Snow removal, Ice removal, Equipment, Municipal engineering, Roads.

39-829
New machines for removing glaze from road pavements. [Novye mashiny dlia razrusheniia ledianykh obrazovaniĭ na dorozhnykh pokrytiiakh],
Izotov, E.N., et al, *Stroitel'nye i dorozhnye mashiny,* July 1984, No.7, p.23-24, In Russian. 3 refs.
Stanovoĭ, L.V., Naumov, V.V., Goppen, A.A., Leonov, V.I.
Pavements, Winter maintenance, Glaze, Ice removal, Roads, Equipment.

39-830
Probability of emergencies during thawing of grouted seams in large-panel buildings. [O veroiatnosti avariĭ krupnopanel'nykh zdaniĭ pri ottaivanii rastvornykh shvov],
Shapiro, G.A., et al, *Zhilishchnoe stroitel'stvo,* July 1984, No.7, p.20-22, In Russian. 4 refs.
Korchagin, O.P.
Large panel buildings, Panels, Joints (junctions), Grouting, Winter concreting, Concrete freezing, Freeze thaw cycles, Concrete structures, Prefabrication.

39-831
Construction of large panel buildings in freezing weather. [Voprosy stroitel'stva krupnopanel'nykh zdaniĭ v zimniĭ period],
Shishkin, A.A., *Zhilishchnoe stroitel'stvo,* Aug. 1984, No.8, p.18-19, In Russian.
Large panel buildings, Prefabrication, Cold weather construction, Concrete structures, Joints (junctions), Grouting, Winter concreting, Concrete freezing, Mortars.

39-832
Cryogenic processes and phenomena in Siberia. [Kriogennye protsessy i iavleniia v Sibiri],
Nekrasov, I.A., ed, Yakutsk, 1984, 164p., In Russian. For individual papers see 39-833 through 39-853. Refs. passim.
Naleds, Thermokarst, Organic soils, Subsea permafrost, Geological surveys, Permafrost structure, Permafrost distribution, Ground ice, Shores, Ice volume, Construction, Frozen fines, Bottom sediment, Permafrost origin, Permafrost hydrology, Forest tundra, Arctic Ocean.

39-833
Cryogenic rocks of the Arctic Basin. [Kriogennye porody Arkticheskogo basseĭna],
Zhigarev, L.A., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.3-13, In Russian. 17 refs.
Shores, Geological surveys, Bottom sediment, Subsea permafrost, Construction, Natural resources, Charts, Arctic Ocean.

39-834
Naled ice accretion and melting. [O namorazhivanii i staivanii naledeĭ],
Petukhova, N.A., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.13-21, In Russian. 19 refs.
Naleds, Alimentation, Ice accretion, Ablation, Artificial ice.

39-835
Formation and spatial distribution of ground ice accumulations in the Yamal Peninsula. [Formirovanie i prostranstvennoe razmeshchenie zalezheĭ podzemnykh l'dov na Iamale],
Orlianskiĭ, V.V., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.22-31, In Russian. 10 refs.
Soil freezing, Frost penetration, Ice formation, Permafrost structure, Permafrost distribution, Permafrost origin, USSR—Kharasavey Cape.

39-836
Frozen peat bogs in northern West Siberia and their botanical structure. [Merzlye torfianiki severa Zapadnoĭ Sibiri i ikh botanicheskoe stroenie],
Streletskaia, I.D., et al, Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.31-39, In Russian. 5 refs.
Turkina, O.S.
Peat, Swamps, Forest tundra, Permafrost distribution, Plant ecology, Ecosystems, Organic soils.

39-837
Cryogenic microstructure of surface loams on the Anabaro-Olenekskoye plateau. [Kriogennoe mikrostroenie pokrovnykh suglinkov Anabaro-Olenekskogo plato],
Bazylev, V.A., et al, Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.39-46, In Russian. 16 refs.
Kunitskiĭ, V.V.
Ice veins, Frozen fines, Loams, Ice lenses, Cryogenic structures, Ice crystal structure, Permafrost structure, River basins, Permafrost distribution, Valleys.

39-838
Cryogenic relief-forming processes in the Upper Barguzin River basin. [Kriogennye rel'efoobrazuiushchie protsessy basseĭna verkhnego Barguzina],
Vyrkin, V.B., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.47-51, In Russian. 6 refs.
Permafrost distribution, Continuous permafrost, Permafrost hydrology, Taliks, Thermokarst, Permafrost weathering, River basins, Vegetation factors, Valleys.

39-839
Studying naleds in the western part of the BAM zone from aerial photographs. [Izuchenie naledeĭ zapadnogo uchastka zony BAMa s ispol'zovaniem aerofotosnimkov],
Kosenkov, V.L., et al, Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.51-55, In Russian.
Kondrat'ev, V.G., Beliakov, A.E.
Naleds, Spaceborne photography, Photointerpretation, Ice volume, River basins.

39-840
Temperature regime and cryogenic structure of grounds in the naled areas of the Chara basin. [Temperaturnyĭ rezhim i kriogennoe stroenie gruntov naledonykh uchastkov Charskoĭ vpadiny],
Sannikov, S.A., et al, Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.55-65, In Russian. 13 refs.
Sokolov, A.V.
Naleds, Ice structure, Frost mounds, Frozen ground temperature, Ice crystal structure, Ice optics, River basins, Valleys.

39-841
Calculating parameters of thermoerosional washout of ground in the Chara basin. [Raschet parametrov termoerozionnogo razmyva gruntov Charskoĭ vpadiny],
Krapachev, A.V., et al, Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.65-70, In Russian. 4 refs.
Salagaev, V.B., Kosenkov, V.L.
Permafrost weathering, Ice melting, Water erosion, River basins, Permafrost distribution.

39-842
Regularities governing the formation of chemical composition of ground waters in the Udokan Range. [Zakonomernosti formirovaniia khimicheskogo sostava podzemnykh vod khrebta Udokan],
Beliakov, A.E., et al, Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.71-76, In Russian.
Verkhoturov, A.G., Krapachev, A.V.
Alpine landscapes, Permafrost hydrology, Taliks, Ground water, Chemical composition, Permafrost distribution.

39-843
Limnogenetic peculiarities in permafrost areas of the Kodar-Udokan region. [Osobennosti limnogeneza v zone mnogoletnemerzlykh gornykh porod (na primere Kodaro-Udokanskogo raĭona)],
Orel, G.F., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.76-83, In Russian. 2 refs.
Alpine landscapes, Glacial lakes, Permafrost beneath lakes, Geocryology, Limnology, Hydrothermal processes.

39-844
Temperature regime of rocks at watersheds in the central course of the Vilyuy River. [Osobennosti temperaturnogo rezhima gornykh porod vodorazdelov v srednem techenii r. Viliuia],
Klimovskiĭ, I.V., et al, Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.83-90, In Russian. 10 refs.
Gotovtsev, S.P.
Watersheds, Permafrost distribution, Permafrost thickness, Permafrost thermal properties, Frozen rock temperature, River basins.

39-845
Permafrost temperature in swampy landscapes of western Yakutia. [O temperature mnogoletnemerzlykh porod marevykh landshaftov v Zapadnoĭ IAkutii],
Konstantinov, P.IA., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.91-95, In Russian. 4 refs.
Swamps, Paludification, Permafrost structure, Peat, Active layer, Frozen rock temperature, Forest land, Permafrost distribution.

39-846
Engineering and geocryological conditions of the Lena River floodplain. [Inzhenerno-geokriologicheskie usloviia poĭmy r. Leny],
Ivanov, M.S., et al, Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.96-104, In Russian. 10 refs.
Konstantinov, I.P.
Permafrost beneath rivers, Permafrost hydrology, Taliks, Urban planning, Floodplains.

39-847
Cryogenic structure of the Edoma formation near the central course of the Alazeya river. [Kriogennoe stroenie edomnoĭ svity v raĭone srednego techeniia r. Alazeia],
Korolev, S.IU., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.104-110, In Russian. 9 refs.
Frozen fines, Permafrost structure, Ice wedges, Ice veins, Edoma complex, Ice composition.

39-848
Dynamics of complex landscape units in river valleys of northern Yakutia. [Dinamika prirodnykh territorial'nykh kompleksov rechnykh dolin severa IAkutii],
Zaikanov, V.G., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.110-119, In Russian. 10 refs.
River basins, Permafrost distribution, Permafrost structure, Ice wedges, Permafrost origin, Permafrost thermal properties, Valleys, Degradation.

39-849
New outcrop showing the ice complex in the lower course of the Kolyma River valley. [Novoe obnazhenie ledovogo kompleksa v nizov'iakh doliny r. Kolymy],
Murzin, IU.A., et al, Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.119-127, In Russian. 3 refs.
Torgovkin, IA.I.
River basins, Permafrost distribution, Valleys, Permafrost structure, Ice wedges, Thermokarst, Geocryology.

39-850
Speed of rock stream movement in the Verkhne-Kolymskoye highlands. [O skorosti dvizheniia kurumov (na primere Verkhne-Kolymskogo nagor'ia)],
Govorushko, S.M., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.128-137, In Russian. 7 refs.
Rock streams, Solifluction, Earthquakes, Flow rate, Alpine landscapes.

39-851
Hydrochemical peculiarities of ice in lakes of the Evoron-Chukchagir basin near the Amur River. [Gidrokhimicheskie osobennosti l'da ozer Evoron-Chikchagirskoĭ vpadiny v Priamur'e],
Shesterkin, V.P., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.137-143, In Russian. 12 refs.
Naleds, Lake ice, Ice composition, Thermokarst lakes, Water chemistry, Distribution, Migration.

39-852
Ice layers in the extrusive and sedimentary rocks of the Kamchatka Peninsula. [O plastovykh l'dakh v effuzivno-osadochnykh porodakh Kamchatki],
Zhiruev, S.P., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.144-149, In Russian. 4 refs.
Permafrost origin, Permafrost distribution, Permafrost structure, Volcanic ash, Sediments, Moraines, Ground ice, Layers.

39-853
Using factor analysis in studying seasonal freezing and thawing of rocks. [Ispol'zovanie faktornogo analiza pri izuchenii sezonnogo promerzaniia i protaivaniia porod],
Bigeeva, R.B., Kriogennye protsessy i iavleniia v Sibiri (Cryogenic processes and phenomena in Siberia) edited by I.A. Nekrasov, Yakutsk, 1984, p.150-155, In Russian. 5 refs.
Soil freezing, Frost penetration, Seasonal freeze thaw, Frozen rocks, Active layer, Statistical analysis, Mathematical models.

39-854
Using loading shovels in earthwork. [Odnokovshovye pogruzchiki na zemlianykh rabotakh],
Beliakov, IU.I., et al, *Mekhanizatsiia stroitel'stva*, Oct. 1984, No.10, p.9-11, In Russian. 3 refs.
Chebanov, L.S., Zhdanov, I.V.
Loading, Earthwork, Construction equipment, Excavation, Frozen ground.

39-855
25 years research activities of the GDR in the Antarctic.
German Democratic Republic. Nationalkomitee für Antarktisforschung, *Geodätische und geophysikalische Veröffentlichungen, Reihe I*, 1984, Special issue, 64p., For individual papers see 39-856 through 39-858 or A-30806, B-30808, C-30803, C-30807, D-30810, E-30805, H-30809, I-30801, I-30802 and K-30804. Bibliography p.50-64.
Expeditions, Research projects.
The GDR celebrates its silver anniversary in Antarctica with this special issue reviewing its research accomplishments alone and in cooperation with the Soviet Antarctic Expedition. In ten papers, highlights of this effort are discussed and progress made over the years is shown. Papers deal with satellite observations; geophysical investigations; upper atmosphere studies; geological explorations; isotope analysis; geodetic-glaciological studies; biological and medical research; and expeditions.

39-856
Satellite observations over Antarctica.
Gernandt, H., *Geodätische und geophysikalische Veröffentlichungen, Reihe I*, 1984, Special issue, p.9-14, With German and Russian summaries.
Spaceborne photography, Ice shelves.
A brief outline is given of progress made in satellite reconnaissance of cloud and ice cover since APTs were developed in the mid-1960s. Equipment installation dates at Mirnyy and the GDR base in the Schirmacher region are given. Observational benefits derived from the satellite programs are noted.

39-857
Isotope research in Antarctica.
Schütze, H., et al, *Geodätische und geophysikalische Veröffentlichungen, Reihe I*, 1984, Special issue, p.28-31, With German and Russian summaries.
Fröhlich, K.
Isotope analysis.
Isotope analysis is useful for studies in hydrology, meteorology, geology, glaciology, paleoclimatology, and biology. Results of deuterium analyses of water in Schirmacher Ponds, in atmospheric humidity, and in lichens, algae, and mosses are outlined. Photos show investigators in field investigations.

39-858
Geodetic-glaciological studies in the East Antarctic 1962-1978.
Meier, S., et al, *Geodätische und geophysikalische Veröffentlichungen, Reihe I*, 1984, Special issue, p.31-35, With German and Russian summaries.
Dietrich, R.
Ice sheets, Geodetic surveys.
These studies began in 1962 when GDR geodesists took part in the 7th SAE. Brief histories of the measurements are given from investigations around Mirnyy, traverses to Vostok, precisely locating the bases, and studies of Hays Glacier. Photographs are included showing field conditions and instruments.

39-859
Geographical aspects of the First International Polar Year, 1882-1883.
Barr, W., *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.463-484, Refs. p.482-484.
Sea ice, International cooperation.
1983 marks the centennial of a milestone event in the history of scientific research in the polar regions, the First International Polar Year. A total of 14 stations was established in the polar regions by 12 different nations, along with a number of subsidiary stations. Focusing primarily on meteorology, geomagnetism, and auroral studies, scientists at these stations carried out a standardized, synchronized program of observations for a full calendar year. Concerning the marine environment the Dutch expedition, whose ship was adrift in the ice of the Kara Sea for the entire year, contributed very valuable observations on the nature and behavior of sea ice. In the Southern Hemisphere a station was established by Germany on South Georgia, and a supplementary observing station on the Falkland Islands.

39-860
Arctic ocean ice and climate: perspectives on a century of polar research.
Barry, R.G., *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.485-501, Refs. p.498-501.
Sea ice distribution, Ice conditions, Climatic factors, Remote sensing, Surface energy, Ice melting, Polynyas, Glacial meteorology, Seasonal variations, Snow cover.

39-861
Spatial variability of antarctic temperature anomalies and their association with the Southern Hemisphere atmospheric circulation.
Rogers, J.C., *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.502-518, Refs. p.517-518.
Sea ice, Climatic factors, Atmospheric circulation, Climatology.
The spatial variability of seasonal mean temperature departures at 26 stations around Antarctica, southern South America, and nearby islands is shown using factor analysis. An opposition in temperature anomalies between mainland stations and those on or near the Antarctic Peninsula is a recurring pattern of spatial variability in all seasons but spring. Other factors indicate that temperature anomalies alternate in sign around the continent and especially near the peninsula. The association between the spatial patterns of temperature variability and features of the atmospheric circulation at middle and higher latitudes of the Southern Hemisphere is also examined. In each season the time series of one factor is significantly associated with temporal variations in the strength of the 500 mb westerlies, measured using height differences across six pairs of middle-latitude and Antarctic stations. In winter and summer the westerlies are linked to the mainland/Peninsula temperature opposition pattern such that when zonal flow is anomalously strong, mainland stations are anomalously cold. In autumn and spring, temperature variability is highly related to meridional flow strength over New zealand and in the lee of the Andes, and is associated with interannual longitudinal shifts in the positions of the climatological lows near the Antarctic coast. A deep Andes trough is associated with longer-than-usual ice duration at the South Orkneys. Historically, strong troughing and heavy sea-ice conditions in the South Atlantic occurred between 1920 and 1935. (Auth.)

39-862
Analysis of the variability of cyclones around Antarctica and their relationship to sea ice extent.
Howarth, D.A., *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.519-537, Refs. p.536-537.
Sea ice, Climatic factors, Atmospheric disturbances.
Results of an analysis of the distribution and movement of extratropical cyclones around Antarctica, for the period Sep. 1973 through May 1975, are presented. Variations in seasonal cyclone frequencies, their preferred longitudinal positions, and the spatial and temporal fluctuations in latitude and pressure are shown, and these indicate good agreement with the known features of Southern Hemisphere climatology. The greatest numbers of cyclones occur during spring and fall, and their most common locations are near coastal embayments. A semiannual oscillation is present in the frequencies, mean latitudes, and mean pressures of the cyclones, although to varying degrees. Longitudinal variations in the intensity of the oscillation are also evident. The belt of maximum cyclone activity exhibits a distinct half-yearly cycle from mean monthly pressures. Harmonic analysis of the spatial variation of this belt and the simultaneous position of the sea-ice margin derived from microwave imagery suggests that there is little correlation between sea ice and cyclone tracks on a hemispheric scale. Close relationships are apparent for short time periods or in specific regions but will require more intensive study before

causal mechanisms can be suggested. The asymmetry of the continent, rather than the extent of sea ice, is probably the principal factor involved in determining the longitudinal variations in the positions and tracks of cyclones around Antarctica on a hemispheric scale. (Auth.)

39-863
Radiation balance of typical terrain units in the low Arctic.
Rouse, W.R., et al, *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.538-549, 8 refs.
Bello, R.L.
Tundra, Continuous permafrost, Radiation balance, Snowmelt, Forest tundra, Climatic factors, Surface temperature, Albedo.

39-864
Re-evaluation of pollen-climate transfer functions in Keewatin, northern Canada.
Kay, P.A., et al, *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.550-559, 29 refs.
Andrews, J.T.
Climatic changes, Paleoclimatology, Palynology, Models, Canada—Northwest Territories.

39-865
Stability of the northern Canadian tree limit.
Elliott-Fisk, D.L., *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.560-576, Refs. p. 574-576.
Forest lines, Biogeography, Trees (plants), Climatic changes, Revegetation, Paleoclimatology, Stability, Fossils.

39-866
Hydrology of a drainage basin in the Canadian high Arctic.
Woo, M., *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.577-596, Refs. p.594-596.
Permafrost hydrology, Snow hydrology, Snowmelt, Stream flow, Water balance, Drainage, Soil water, Tundra, Meltwater, Active layer, Canada—Northwest Territories.

39-867
Supraglacial stream dynamics on the Juneau icefield.
Marston, R.A., *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.597-608, 39 refs.
Glacial hydrology, Meltwater, Stream flow, Geomorphology, Glacier ablation, Channels (waterways), Soil erosion, Runoff, Diurnal variations.

39-868
High Arctic soils through the microscope: prospect and retrospect.
Bunting, B.T., *Association of American Geographers. Annals*, Dec. 1983, 73(4), p.609-616, 29 refs.
Permafrost physics, Soil structure, Microstructure, Porosity, Soil profiles, Soil classification, Ice lenses, Hummocks, Sediments.

39-869
Predicting thermal state of the ground during economic development of northern regions. [Prognoz teplovogo sostoianiia gruntov pri osvoenii severnykh raĭonov],
Cherniad'ev, V.P., et al, Moscow, Nauka, 1984, 137p., In Russian with English table of contents enclosed. Refs. p.134-136.
Chekhovskiĭ, A.L., Stremiakov, A.IA., Pakulin, V.A.
Foundations, Soil freezing, Permafrost beneath structures, Frost penetration, Permafrost thermal properties, Soil air interface, Frozen ground temperature, Buildings, Snow depth, Heat transfer, Soil water migration, Heat flux, Measuring instruments.

39-870
Construction of large panel buildings. [Krupnopanel'noe domostroenie],
Rozanov, N.P., Moscow, Stroĭizdat, 1982, 224p., In Russian with English table of contents enclosed. 14 refs.
Walls, Prefabrication, Panels, Reinforced concretes, Large panel buildings, Foundations, Houses, Design, Earthquakes.

39-871
Second National Chinese Conference on Permafrost, Lanzhou, China, 12-18 October 1981.
Brown, J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1982, SR 82-03, 58p. ADA-114 445.
Yen, Y.C.
Permafrost, Frozen ground, Research projects, Meetings, Geocryology, China.
The Second National Chinese Conference on Permafrost was attended by the authors, and visits were made to two research institutes in Lanzhou, the Northwest Institute of the China Academy of Railway Sciences and the Institute of Glaciology and Cryopedology. Approximately 100 papers were presented at the conference and 130 abstracts were published. The papers were presented during three sessions: 1) Distribution, Characteristics and Formation of Frozen Ground, 2) Basic Physico-Mechanical Properties and Processes in Frozen Soils, and 3) Engineering Design and Construction in Permafrost. Sixty-nine institutions conducting frozen ground research in China were represented. It was planned to present selected papers from this conference at the Fourth International Conference on Permafrost in Fairbanks, Alaska, in 1983.

39-872
Predicting wheeled vehicle motion resistance in shallow snow.
Blaisdell, G.L., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1981, SR 81-30, 18p., ADA-147 117, 14 refs.
Rubber snow friction, Snow compaction, Vehicle wheels, Snow depth, Snow cover effect, Trafficability, Velocity, Forecasting, Mathematical models.
A vehicle traveling through snow is required to expend a greater amount of energy than is necessary when traveling on a rigid surface. Visually, this energy difference can be explained by the formation of a rut. Various attempts have been made in the past to equate the energy of compaction to vehicle motion resistance. However, many of the previous models use information gathered through the application of a vertical force (with a plate-sinkage device) to predict the horizontal motion resisting force. In an attempt to more accurately quantify the relationship between snow compaction and vehicle motion resistance, a vectorial analysis of compaction by a wheel is performed. A method for separating the compaction due to vehicle weight and forward thrust (horizontal propulsion) is suggested. Two methods of using this compaction force breakdown with field-generated data are proposed for the calculation of vehicle motion resistance in shallow snow.

39-873
Meteorological conditions causing major ice jam formation and flooding on the Ottauquechee River, Vermont.
Bates, R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1982, SR 82-06, 25p., ADA-116 386, 15 refs.
Brown, M.-L.
Ice jams, Flooding, Meteorological factors, Ice breakup, River ice, River flow, Precipitation (meteorology), United States—Vermont—Ottauquechee River.
This report discusses wintertime meteorological conditions that can induce rapid ice breakup, ice jam formation and subsequent flooding. These conditions, described for the Ottauquechee River in Vermont, should be representative of those for similar unregulated river systems in northern temperate regions. Summer flood conditions are compared to those during winter floods, when river ice is the main impediment to water flow. Comparisons are made for total precipitation, stage height and the synoptic meteorological situations.

39-874
Aerostat icing problems.
Hanamoto, B., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1983, SR 83-23, 29p. ADA-133 403.
Balloons, Icing, Protective coatings, Ice prevention, Coatings.
This report describes laboratory tests to determine the effectiveness of a copolymer coating on a balloon to minimize ice build-up problems when operating in sleet, freezing rain or other ice-forming conditions. Methods for deicing the surface after an ice cover forms are also described. A small-scale balloon was used for the laboratory tests. A full-scale prototype was also partially coated with the copolymer to test its effectiveness as an icing control measure.

39-875
Analysis of winter heat flow in an ice-covered Arctic stream.
Wankiewicz, A., *Canadian journal of civil engineering*, Sep. 1984, 11(3), p.430-443, With French summary. 24 refs.
Heat transfer, Water temperature, River ice, Stream flow, Ice formation, Ice growth, Air temperature, Models.

39-876
Analysis of breakup and ice jams on the Athabasca River at Fort McMurray, Alberta.
Andres, D.D., et al, *Canadian journal of civil engineering*, Sep. 1984, 11(3), p.444-458, With French summary. 20 refs.
Doyle, P.F.
Ice jams, Ice breakup, Ice conditions, Hydraulics, Surface roughness, Flooding, Winter, Canada—Alberta—Athabasca River.

39-877
Variation of ground snow loads with elevation in Southern British Columbia.
Claus, B.R., et al, *Canadian journal of civil engineering*, Sep. 1984, 11(3), p.480-493, With French summary. 11 refs.
Russell, S.O., Schaerer, P.
Snow loads, Snow water equivalent, Surface properties, Altitude, Climatic factors, Canada—British Columbia.

39-878
Conceptual model of river ice breakup.
Beltaos, S., *Canadian journal of civil engineering*, Sep. 1984, 11(3), p.516-529, With French summary. 25 refs.
Ice breakup, River ice, Ice mechanics, Ice cracks, Mathematical models, Forecasting, Ice sheets.

39-879
Cold climate facultative lagoons.
Tilsworth, T., et al, *Canadian journal of civil engineering*, Sep. 1984, 11(3), p.542-555, Refs. p.553-555.
Smith, D.W.
Waste treatment, Water treatment, Permafrost preservation, Climatic factors, Water pollution, Microbiology, Design.

39-880
Hydrothermal processes beneath Arctic river channels.
Wankiewicz, A., *Water resources research*, Oct. 1984, 20(10), p.1417-1426, 23 refs.
Taliks beneath rivers, Hydrothermal processes, Heat transfer, Freeze thaw cycles, Frost penetration, Soil temperature, Thermal diffusion, Seasonal freeze thaw, River flow, Ground water.

39-881
Illustration of the spatial variability of light entering a lake using an empirical model.
Roulet, N.T., et al, *Hydrobiologia*, 1984, No.109, p.67-74, 19 refs.
Adams, W.P.
Ice optics, Light transmission, Lake ice, Snow cover effect, Ice cover thickness, Snow depth, Wave propagation, Ecosystems, Mathematical models.

39-882
Lake bottom heave in permafrost: Illisarvik drained lake site, Richards Island, Northwest Territories.
Mackay, J.R., *Canada. Geological Survey. Paper*, 1984, No.84-1B, p.173-177, With French summary. 12 refs.
Permafrost beneath lakes, Frost heave, Soil freezing, Bottom sediment, Soil temperature, Lake water, Artificial freezing, Temperature effects, Drainage, Canada—Northwest Territories—Richards Island.

39-883
Evolution of flood-plain soils of the taiga zone (as illustrated by the Kul'-Yegan River floodplain).
Aref'eva, Z.N., *Soviet soil science*, 1977, No.2, p.33-44, Translated from Pochvovedenie. 23 refs.
Taiga, Cryogenic soils, Soil formation, Litter, Floodplains, Soil profiles, Plant ecology, Mosses.

39-884
Field experiments on freezing and thawing at 3,350 meters a.s.l. in the Rocky Mountains of Colorado, Boulder, USA.
Corte, A.E., et al, International Symposium on Geomorphology, [Liège, 1972. Proceedings], Les Congrès et Colloques de l'Université de Liège, Vol.67, [Liège, 1972], p.43-56, 11 refs.
Poulin, A.O.
Freeze thaw cycles, Soil freezing, Frost penetration, Frost shattering, Thaw depth, Snow cover effect, Mountains, Soil texture, United States—Colorado—Boulder.

39-885
Transport from a vertical ice surface melting in saline water.
Johnson, R.S., et al, *International journal of heat and mass transfer*, Oct. 1984, 27(10), p.1928-1932, 20 refs.
Mollendorf, J.C.
Ice melting, Sea water, Thermal diffusion, Ice water interface, Ice cover thickness, Salinity, Temperature effects.

39-886
Changes in Arctic tussock tundra thirteen years after fire.
Fetcher, N., et al, *Ecology*, Aug. 1984, 65(4), p.1332-1333, 2 refs.
Beatty, T.F., Mullinax, B., Winkler, D.S.
Tundra, Hummocks, Revegetation, Fires, Ecosystems, Vegetation, Thaw depth.

39-887
Dynamics and thermal regimes of rivers and reservoirs. [Dinamika i termika rek i vodokhranilishch],
Fidman, B.A., ed, Moscow, Nauka, 1984, 296p., In Russian. For selected papers see 39-888 through 39-890. Refs. passim.
Debol'skiĭ, V.K., ed.
Ice jams, Ice growth, Ice conditions, Floods, Ice deterioration, Ice air interface, Ice breakup, Tides, Estuaries, Heat balance, Icebound rivers, Icebound lakes, Water transport, Turbulent exchange.

39-888
Calculation of thermal balance of the growth and deterioration of river and reservoir ice covers under sharply continental climatic conditions. [Teplobalansovye raschety narastaniia i razrusheniia ledianogo pokrova rek i vodokhranilishch v usloviiakh rezko kontinental'nogo klimata],
Bellinson, M.M., Dinamika i termika rek i vodokhranilishch (Dynamics and thermal regime of rivers and reservoirs) edited by B.A. Fidman and V.K. Debol'skiĭ, Moscow, Nauka, 1984, p.220-233, In Russian. 22 refs.
Ice growth, Ice deterioration, Ice air interface, Heat transfer, Icebound rivers, Heat balance, Icebound lakes, Ice cover thickness.

39-889
Mechanics of the formation and disruption of ice jams on rivers and reservoirs of hydroelectric power plants (from field observation data). [Mekhanika obrazovaniia i razrusheniia zatorov l'da na rekakh i vodokhranilishchakh GES (po dannym naturnykh issledovaniĭ)],
Karnovich, V.N., Dinamika i termika rek i vodokhranilishch (Dynamics and thermal regime of rivers and reservoirs) edited by B.A. Fidman and V.K. Debol'skiĭ, Moscow, Nauka, *1984, p.234-239, In Russian. 11* refs.
Ice breakup, Ice jams, Hydraulic structures, Ice loads, Floods, Water level, Icebound rivers, Icebound lakes, Ice forecasting.

39-890
Turbulent exchange in river estuaries during high tide, in the presence of ice cover. [O turbulentnom obmene v prilivnom ust'e pri nalichii ledianogo pokrova],
Debol'skiĭ, V.K., et al, Dinamika i termika rek i vodokhranilishch (Dynamics and thermal regime of rivers and reservoirs) edited by B.A. Fidman and V.K. Debol'skiĭ, Moscow, Nauka, 1984, p.279-290, In Russian. 17 refs.
Zyrianov, V.N., Mordasov, M.A.
Ice conditions, Turbulent exchange, Sea ice, Tides, River ice, Water transport, Estuaries.

39-891
Hydrogeological forecasts for construction under severe climatic conditions. [Gidrogeologicheskie prognozy pri stroitel'stve v surovykh klimaticheskikh usloviiakh],
Sotnikov, A.B., Moscow, Nedra, 1984, 81p., In Russian with English table of contents enclosed. 30 refs.
Tunneling (excavation), Water table, Seepage, Drainage, Wells, Naleds, Countermeasures, Tunnels, Design.

39-892
Activated hardening of cements. [Aktivirovannoe tverdenie tsementov],
Svatovskaia, L.B., et al, Leningrad, Strofizdat, 1983, 161p., In Russian with English table of contents enclosed. 87 refs.
Sychev, M.M.
Concrete aggregates, Cements, Cement admixtures, Concrete admixtures, Concrete durability, Concrete hardening, Frost resistance, Hydrothermal processes.

39-893
Standard, sectional, container-designed buildings for power plant construction. [Inventarnye sborno-razbornye i konteĭnernye zdaniia dlia energostroitel'stva],
Dukarskiĭ, IU.M., et al, *Energeticheskoe stroitel'stvo,* Sep. 1984, No.9, p.22-26, In Russian.
Russonik, A.B., Sergeev, IU.V., Zelikin, E.M.
Standards, Earthquakes, Steel structures, Residential buildings, Prefabrication, Thermal insulation, Modular construction, Transportation.

39-894
Performance of mechanical equipment of hydroelectic power plants under northern conditions. [Rabota mekhanicheskogo oborudovaniia GES v severnykh usloviiakh],
Martenson, V.IA., *Energeticheskoe stroitel'stvo,* Sep. 1984, No.9, p.31-34, In Russian. 8 refs.
Ice pressure, Electric power, Equipment, Cold weather performance, Hydraulic structures, Dams, Spillways, Ice loads, Ice prevention, Steel structures, Industrial buildings, Ice breakup, Concrete structures, Flood control.

39-895
Grouping of ground according to time required for excavation with power shovels. [O gruppirovke gruntov po trudoemkosti vyemki stroitel'nymi ekskavatorami],
Beliakov, IU.I., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1984, No.8, p.89-92, In Russian. 5 refs.
Galimullin, V.A., Ovcharenko, V.A., Chebanov, L.S.
Frozen ground strength, Excavation, Construction equipment, Earthwork.

39-896
Ice dynamics.
Hibler, W.D., III, *U.S. Army Cold Regions Research and Engineering Laboratory,* July 1984, M 84-03, 52p., ADA-147 376, Refs. p.48-52.
Ice mechanics, Rheology, Drift, Thermodynamics, Ice plasticity, Oceanography, Sea ice, Ice formation, Ice air interface, Ice water interface, Ice strength, Ice cover thickness, Ice models, Sea water, Antarctica—Weddell Sea.
This monograph reviews essential aspects of sea ice dynamics of the Arctic and Antarctic on the geophysical scale and discusses the role of ice dynamics in air-sea-ice interaction. The review is divided into the following components: a) a discussion of the momentum balance describing ice drift, b) an examination of the nature of sea ice rheology on the geophysical scale, c) an analysis of the relationship between ice strength and ice thickness characteristics, and d) a discussion of the role of ice dynamics in the atmosphere-ice-ocean system. Because of the unique, highly nonlinear nature of sea-ice interaction, special attention is given to the ramifications of ice interaction on sea ice motion and deformation. These ramifications are illustrated both by analytic solution and by numerical model results. In addition, the role of ice dynamics in the atmosphere-ice-ocean system is discussed in light of numerical modeling experiments, including a fully coupled ice-ocean model of the Arctic-Greenland-Norwegian seas.

39-897
Ice conditions around artificial islands, 1976-1977.
Favrat, D., *Arctic Petroleum Operators Association, Calgary, Alta. Report,* 1977, No.122-2, 84p., Edited by S.B. Shinde and J.R. Hawkins, 1982. 3 refs.
Ice conditions, Artificial islands, Ice mechanics, Ice loads, Ice salinity, Ice cores, Ice pressure, Ice pileup, Monitors, Ice drills, Beaufort Sea.

39-898
***Offshore* ice investigation, North Slope, Alaska: Final report.**
Polar Expeditions, Inc., Dec. 1970, 53p. + appends, Refs. p.43-48.
Ice conditions, Sea ice distribution, Ice mechanics, Ice push, Ice scoring, Shear strength, Bottom sediment, Drill core analysis, Computer applications, Aerial surveys, United States—Alaska—North Slope.

39-899
Experimental investigation of ice forces on cylindrical structures.
Strickland, G.E., La Habra, CA, Chevron Oil Field Research Co., Sep. 1973, 36p. + figs., 3 refs.
Ice loads, Offshore structures, Ice strength, Ice adhesion, Strains, Ice pressure, Surface properties, Ice sheets, Countermeasures, Experimentation.

39-900
Experimental investigation of ice forces on cone-shaped structures.
Strickland, G.E., La Habra, CA, Chevron Oil Field Research Co., Sep. 1973, 62p. + figs., 5 refs.
Ice loads, Offshore structures, Ice pressure, Ice mechanics, Ice adhesion, Ice strength, Floating ice, Ice cover thickness, Ice sheets, Surface properties, Equipment, Experimentation, Mathematical models.

39-901
Man and nature in the BAM zone (environmental protection and the use of natural resources). [Chelovek i priroda v zone BAM (okhrana okruzhaiushcheĭ sredy i ratsional'noe ispol'zovanie prirodnykh resursov)],
Vorob'ev, V.V., ed, Irkutsk, 1984, 156p., In Russian. For selected papers see 39-902 through 39-904. Refs. passim.
Naprasnikov, A.T., ed.
Permafrost distribution, Permafrost beneath structures, Frozen fines, Permafrost hydrology, Gullies, Slope processes, Avalanche formation, Economic development, Environmental impact, Baykal Amur railroad.

39-902
Permafrost and environmental protection of major basins in the Stanovoy highlands. [Merzlye porody i okhrana prirody krupnykh vpadin Stanovogo Nagor'ia],
Nekrasov, I.A., et al, Chelovek i priroda v zone BAM (okhrana okruzhaiushcheĭ sredy i ratsional'noe ispol'zovanie prirodnykh resursov) (Man and nature in the BAM zone (environmental protection and the use of natural resources)) edited by V.V. Vorob'ev and A.T. Naprasnikov, Irkutsk, 1984, p.46-58, In Russian. 22 refs.
An, V.V., Solov'eva, L.N.
Permafrost distribution, Permafrost beneath structures, Permafrost structure, Frozen fines, Ice wedges, Ice veins, Permafrost hydrology, Thermokarst, Gullies, Baykal Amur railroad.

39-903
Estimation of mudflow and avalanche danger in the BAM zone. [Otsenka lavinnoĭ i selevoĭ opasnosti zony BAMa],
Perov, V.F., et al, Chelovek i priroda v zone BAM (okhrana okruzhaiushcheĭ sredy i ratsional'noe ispol'zovanie prirodnykh resursov) (Man and nature in the BAM zone (environmental protection and the use of natural resources)) edited by V.V. Vorob'ev and A.T. Naprasnikov, Irkutsk, 1984, p.59-68, In Russian.
Kirichenko, A.V., Laptev, M.N.
Alpine landscapes, Slope processes, Mudflows, Avalanche formation, Avalanche forecasting, Baykal Amur railroad.

39-904
Trends in economic development of the Chita section of the BAM zone. [Osnovnye napravleniia khoziaĭstvennogo osvoeniia prirodnykh resursov chitinskogo uchastka zony BAM],
Zadorozhnyĭ, V.F., et al, Chelovek i priroda v zone BAM (okhrana okruzhaiushcheĭ sredy i ratsional'noe ispol'zovanie prirodnykh resursov) (Man and nature in the BAM zone (environmental protection and the use of natural resources)) edited by V.V. Vorob'ev and A.T. Naprasnikov, Irkutsk, 1984, p.101-108, In Russian. 11 refs.
Nedeshev, A.A.
Economic development, Mining, Electric power, Forestry, Transportation, Roads, Permafrost distribution, Cryogenic soils, Environmental impact, Subarctic landscapes, Taiga, Alpine tundra, Baykal Amur railroad.

39-905
Long range forecasts of ice conditions in non-arctic seas. [Dolgosrochnyĭ prognoz ledovitosti nearkticheskikh morei],
Karakash, A.I., et al, *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1984, Vol.263, p.81-90, In Russian. 5 refs.
Korob, M.I.
Sea ice distribution, Ice conditions, Drift, Long range forecasting, Ice navigation, Ice reporting.

39-906
Predicting the spatial distribution of dates of ice disappearance from northwestern seas of the USSR. [Prognoz prostranstvennogo raspredeleniia srokov ochishcheniia oto l'da severo-zapadnykh morei SSSR],
Shermetevskaia, O.I., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1984, Vol.263, p.91-100, In Russian. 6 refs.
Ice conditions, Sea ice distribution, Ice forecasting, Ice melting, Ice cover thickness, Ice navigation, Ice reporting.

39-907
Statistical characteristics of dates of ice melting and the rate of ice disappearance in the Azov Sea. [Statisticheskie kharakteristiki srokov ochishcheniia oto l'da i skorosti taianiia l'da v Azovskom more],
Kutsuruba, A.I., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1984, Vol.263, p.101-105, In Russian. 2 refs.
Ice navigation, Ice forecasting, Sea ice distribution, Ice conditions, Ice melting, Statistical analysis.

39-908
Possibility of calculating snow loads for the USSR. [O vozmozhnosti rascheta snegovykh nagruzok na territorii SSSR],
Karapet'iants, E.M., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy,* 1983, Vol.475, p.44-51, In Russian. 1 ref.
Runoff, Flood control, Snow cover distribution, Snow depth, Snow water equivalent, Stream flow, Hydraulic structures, Long range forecasting, Snow loads, Snow pressure.

39-909
Relations between changes of the sign of anomalies of maximum snow water reserves and the changes in circulation conditions. [Vzaimosviaz' izmenenii znakov anomalii maksimal'nogo zapasa vody v snege s izmeneniiami tsirkuliatsionnykh uslovii].
Karapet'iants, E.M., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1983, Vol.475, p.93-101, In Russian. 5 refs.
Morozov, V.S.
Atmospheric circulation, Snow cover distribution, Snow water equivalent, Meteorological data, Meteorological charts.

39-910
Influence of steady ice cover establishment dates on water inflow into the Kiev reservoir in the first quarter. [Vliianie srokov ustanovleniia ledostava na formirovanie pritoka vody v Kievskoe vodokhranilishche v pervom kvartale],
Kochelaba, E.I., *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.200, p.83-88, In Russian.
Alimentation, Subglacial drainage, Stream flow, Ice-bound lakes.

39-911
Mudflow and avalanche danger in mountainous and gullied areas of the Ukrainian SSR. [Sele- i lavinoopasnost' gornykh i ovrazhno-balochnykh raionov Ukrainskoi SSR],
Aizenberg, M.M., et al, *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.200, p.88-95, In Russian. 9 refs.
Grishchenko, V.F.
River basins, Mountain soils, Slope processes, Mudflows, Avalanche formation, Countermeasures.

39-912
Hydrology of Lake Baykal and other water bodies. [Gidrologiia Baĭkala i drugikh vodoemov],
Verbolov, V.I., ed, Novosibirsk, Nauka, 1984, 167p., In Russian. For selected papers see 39-913 and 39-914.
Ice breakup, Icebound lakes, Ice forecasting, Long range forecasting, Ice conditions, Ice cover thickness, Solar radiation, Heat flux, Water temperature, Convection.

39-913
Improving long range forecasts of ice breakup on Lake Baykal. [Utochnenie dolgosrochnogo prognoza vskrytiia ledianogo pokrova na Baĭkale],
Kuimova, L.N., Gidrologiia Baĭkala i drugikh vodoemov (Hydrology of Lake Baykal and other water bodies) edited by V.I. Verbolov, Novosibirsk, Nauka, 1984, p.84-88, In Russian.
Icebound lakes, Ice breakup, Ice forecasting, Long range forecasting, Ice conditions.

39-914
Penetrating convection during the period of subglacial heating of Lake Onega. [Pronikaiushchaia konvektsiia v period podlednogo progreva v Onezhskom ozere],
Petrov, M.P., Gidrologiia Baĭkala i drugikh vodoemov (Hydrology of Lake Baykal and other water bodies) edited by V.I. Verbolov, Novosibirsk, Nauka, 1984, p.88-92, In Russian.
Icebound lakes, Solar radiation, Lake water, Water temperature, Convection, Heat flux, Ice cover thickness.

39-915
Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries. [XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 aprelia 1984 g.)],
Laperdin, V.K., ed, Irkutsk, 1984, 240p., In Russian. For selected summaries see 39-916 through 39-925.
Permafrost structure, Permafrost distribution, Permafrost hydrology, Electromagnetic prospecting, Taliks, Thermokarst, Brines, Frozen fines, River basins, Data processing, Physical properties, Valleys, Railroads, Environmental impact, Icebound lakes, Lake ice, Shore erosion, Frost action, Permafrost beneath lakes.

39-916
Frost weathering of clayey grounds on shore benches of the Irkutsk water reservoir. [Moroznoe vyvetrivanie glinistykh gruntov beregovykh ustupov na Irkutskom vodokhranilishche],
Shul'gin, M.V., XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.134-135, In Russian.
Frost action, Permafrost beneath lakes, Icebound lakes, Shore erosion, Loess, Frozen fines, Frost penetration.

39-917
Rate of retreat of the edge of shore benches on the Bratsk reservoir. [O tempakh otstupaniia brovki beregovykh ustupov na Bratskom vodokhranilishche],
Shul'gin, M.V., XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.135-136, In Russian.
Permafrost beneath lakes, Lake ice, Shore erosion, Frozen fines, Frost action, Loess, Frost penetration.

39-918
Linear erosion on the forest-steppe shores of the Bratsk reservoir. [Rasprostranenie lineĭnoĭ erozii na poberezh'e lesostepnoĭ zony Bratskogo vodokhranilishcha],
Khamaganova, S.I., et al, XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.136, In Russian.
Aleksandrova, N.IU.
Slope processes, Permafrost beneath lakes, Shore erosion, Forest land, Frozen fines, Loams, Steppes, Polygonal topography, Thermokarst, Paludification.

39-919
Changes in natural conditions induced by railroads. [Osobennosti izmeneniia prirodnykh uslovii v zone vliianiia zheleznykh dorog],
Mushakov, A.A., XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.139-140, In Russian.
Naleds, Railroads, Embankments, Paludification, Environmental impact, Slope processes, Continuous permafrost, Solifluction, Permafrost hydrology.

39-920
Peculiarities of thawing ground compression under dynamic loads. [Osobennosti szhimaemosti ottaivaiushchikh gruntov pri dinamicheskikh nagruzkakh],
Inozemtsev, V.K., XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.148, In Russian.
Frozen fines, Compressive properties, Sands, Ground thawing, Tests, Dynamic loads, Laboratory techniques.

39-921
Thermal settlement of the surface of the aggradation-erosion plain in Central Yakutia. [Termoprosadochnye deformatsii poverkhnosti akkumuliativno-erozionnykh ravnin Tsentral'noĭ IAkutii],
Bazylev, V.A., XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.149-150, In Russian.
Plains, Thermokarst, Polygonal topography, Hydrothermal processes, Settlement (structural), Taiga, Permafrost structure, Permafrost distribution.

39-922
Experimental studies of cryometamorphism of brines in the Daldyno-Alakitskii region. [Eksperimental'nye issledovaniia kriometamorfizma rassolov Daldyno-Alakitskogo raiona],
Alekseev, S.V., XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.158-159, In Russian.
Permafrost hydrology, Unfrozen water content, Subpermafrost ground water, Brines, Supercooling, Tests, Freezing, Permafrost structure, Laboratory techniques.

39-923
Peculiarities of thermokarst. [Osobennosti merzlotnogo karsta],
Filippov, A.G., XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.159, In Russian.
Thermokarst, Permafrost hydrology, Permafrost structure, Permafrost distribution, Taliks, Origin.

39-924
Peculiarities of ice vein formation in the deposits of the naled areas of river valleys in the Verkhnecharskaya Basin. [Osobennosti zhil'nogo l'doobrazovaniia v otlozheniiakh nalednykh uchastkov rechnykh dolin Verkhnecharskoĭ kotloviny],
Sannikov, S.A., XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.160, In Russian.
Ice veins, River basins, Permafrost distribution, Permafrost hydrology, Naleds, Valleys, Frost shattering, Flood plains, Snow cover effect.

39-925
Combined computer processing of ZSB and vertical electrical sounding data when studying river valleys under permafrost conditions. [Kompleksnaia mashinnaia obrabotka materialov VEZ i ZSB pri izuchenii rechnykh dolin v usloviiakh mnogoletneĭ merzloty],
Dmitriev, A.G., et al, XI konferentsiia molodykh nauchnykh sotrudnikov po geologii i geofizike Vostochnoĭ Sibiri. Tezisy dokladov (Irkutsk, 17-19 Aprelia 1984) (Conference of young scientific associates on the geology and geophysics of eastern Siberia, 11th, Irkutsk, Apr. 17-19, 1984. Summaries) edited by V.K. Laperdin, Irkutsk, 1984, p.189-190, In Russian.
Nikiforov, S.P., Solov'ev, V.K.
Electromagnetic prospecting, Permafrost distribution, Computer programs, River basins, Data processing, Valleys.

39-926
Dependence of ice-forming activity of natural aerosols of different sizes on supersaturation and temperature. [Zavisimost' l'doobrazuiushcheĭ aktivnosti estestvennykh aerozoleĭ razlichnykh razmerov ot peresyshcheniia i temperatury],
Berezinskiĭ, N.A., et al, *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1984, Vol.53, p.37-45, In Russian. 11 refs.
Stepanov, G.V.
Cloud seeding, Aerosols, Nucleating agents, Ice crystal nuclei.

39-927
Studying the aerosol structure of hailstones. [Issledovanie aerozol'noĭ struktury gradin],
Tlisov, M.I., et al, *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1984, Vol.53, p.88-96, In Russian. 9 refs.
Berezinskiĭ, N.A.
Ice nuclei, Hailstone structure, Aerosols, Ice crystal growth, Dispersions, Ice formation.

39-928
Increasing seismic stability of earth dams. [Povyshenie seismostoikosti plotin iz gruntovykh materialov], Natariius, IA.I., Moscow, Energoatomizdat, 1984, 88p., In Russian with English table of contents enclosed. 32 refs.
Earth dams, Embankments, Foundations, Slope stability, Rock fills, Earth fills, Earthquakes, Deformation, Hydraulic structures, Hydrothermal processes, Settlement (structural), Concrete structures, Reinforced concretes.

39-929
United States polar icebreaker requirements study. U.S. Coast Guard, [Washington, D.C.], July 1984, c200 leaves.
Ships, Icebreakers, Marine transportation, Logistics.
To promote more efficient management and operation of the nation's polar icebreaker resources, an interdepartmental study group examined polar icebreaker needs of all federal agencies through the year 2000. This analysis focused on: forecasting icebreaker requirements; assessing user alternatives; and developing financing recommendations. Portions of the report deal with such aspects as past usage, user surveys, environmental data, icebreakers of the world, commercial icebreakers, industry views and comments, polar icebreaker costs and reimbursement, and cutter employment standards. (Auth. mod.)

39-930
Studies of ice formation and ice fabric on the Law Dome, Antarctica.
Xie, Z., *Journal of glaciology and cryopedology*, Mar. 1984, 6(1), p.1-22, 28 refs., In Chinese with English summary.
Ice formation, Ice crystal structure, Snow stratigraphy, Ice cores, Climatic changes, Oxygen isotopes, Bubbles, Boreholes, Ice dating, Antarctica—Law Dome.
Snow stratigraphical studies, together with crystallographic and oxygen isotope analyses, have affirmed the existence of a complete range of ice formation zones on the Law Dome, Antarctica. Between the coast and the summit of the Dome the following 6 zones of progression are observed: ablation, infiltration-congelation (superimposed ice), infiltration, cold infiltration-recrystallization, regelation and recrystallization. The distribution of these zones on the Law Dome is asymmetric: the zone boundaries occur at a higher elevation on the west side than on the east side, reflecting the asymmetry in accumulation and thermal conditions. At the very bottom of the borehole the ice contains dirt and moraine particles, and the microtexture shows that in each large crystal, the air bubbles have a preferred orientation in the basal plane. This indicates regelation-recrystallization, as the ice is at pressure melting and basal sliding occurs. Comparisons with borehole inclination and oxygen isotope data show that the two layers of single maximum fabric correspond to two layers of high ice shear and the second layer contains ice dating back to the period of the last glaciation. (Auth. mod.)

39-931
Analysis of microparticles in ice cores: an indicator of past environments.
Thompson, L.G., *Journal of glaciology and cryopedology*, Mar. 1984, 6(1), p.25-32, 22 refs., In Chinese with English summary.
Ice structure, Ice cores, Particle size distribution, Paleoclimatology, Climatic changes, Microstructure, Oxygen isotopes, Antarctica—Byrd Station.
The dry snow facies of continental ice sheets and ice caps from Antarctica and Greenland contain particulate material and isotopic species which provide information about the physical properties of the atmosphere at the time of precipitation formation and deposition. Major conclusions from the study of microparticles in four deep ice cores are drawn. The detailed understanding of global climatic variations over the last 1000 years will be most important in predicting future climate variations over the next 100 years. (Auth. mod.)

39-932
Creep behavior of frozen silt under constant uniaxial stress.
Zhu, Y., et al, *Journal of glaciology and cryopedology*, Mar. 1984, 6(1), MP 1807, p.33-48, In Chinese with English summary. 13 refs. For another source see 38-1373 (MP 1805).
Carbee, D.L.
Soil creep, Frozen ground mechanics, Rheology, Stresses, Frozen ground strength, Compressive properties, Frozen ground temperature, Grain size, Tests, Temperature effects.
A series of unconfined compression creep tests was conducted on saturated frozen Fairbanks silt at constant-stress and constant-temperature conditions. The authors suggest that the creep of frozen soil be classified into two types: short-term and long-term creep. Different constitutive and strength-loss equations are presented for each type of creep. On the basis of Assur's creep model (1980) and this criterion, a creep equation was derived that can describe the entire process of creep of frozen soil.

39-933
Preliminary study on Quaternary climate in China.
Guo, X., *Journal of glaciology and cryopedology*, Mar. 1984, 6(1), p.49-59, 7 refs., In Chinese with English summary.
Glaciation, Paleoclimatology, Geological surveys, Climatic changes, Pleistocene, Snow line, Temperature variations, Permafrost, China.

39-934
Preliminary discussion on influence of Tarim Basin upon the glacier development in southern Tian Shan Mountains.
Wang, Z., et al, *Journal of glaciology and cryopedology*, Mar. 1984, 6(1), p.61-70, 6 refs., In Chinese with English summary.
Han, Y.
Mountain glaciers, Ice formation, Landforms, Alpine landscapes, Air masses, Atmospheric circulation, China—Tian Shan.

39-935
Basic characteristics of periglacial landforms on Wutai Mountain.
Zhu, J., et al, *Journal of glaciology and cryopedology*, Mar. 1984, 6(1), p.71-76, 2 refs., In Chinese with English summary.
Cui, Z.
Periglacial processes, Landforms, Alpine landscapes, Altiplanation, Pleistocene, Polygonal topography, China—Wutai Mountain.

39-936
On the classification of ground water in the permafrost area in Qilian Shan.
Guo, P., *Journal of glaciology and cryopedology*, Mar. 1984, 6(1), p.79-84, 2 refs., In Chinese with English summary.
Permafrost hydrology, Ground water, Frozen ground physics, Soil water, Classifications, China—Qilian Shan.

39-937
Glaciers of China.
Huang, J., *Journal of glaciology and cryopedology*, Mar. 1984, 6(1), p.85-93, In Chinese. 11 refs.
Mountain glaciers, Glacier surveys, Research projects, China.

39-938
Engineering investigations for the construction of main pipelines. [Inzhenernye izyskaniia magistral'nykh truboprovodov],
Tikhonov, A.I., et al, Kiev, Budyvel'nik, 1984, 81p., In Russian with English table of contents enclosed. 17 refs.
Fomik, V.I., Tikhonova, I.A.
Pipelines, Engineering geology, Site surveys, River crossings, Gas pipelines, Forest land, Paludification, Swamps, Icebound rivers, Ice cover thickness.

39-939
"Wall in the ground" at subzero temperatures (winter construction of the underground part of sewage-pumping stations). ["Stena v grunte" pri nizkikh temperaturakh (O zimnem stroitel'stve podzemnoĭ chasti kanalizatsionno-nasosnoĭ stantsii)],
IAkimov, E.A., *Mekhanizatsiia stroitel'stva*, Sep. 1984, No.9, p.15-16, In Russian.
Soil freezing, Underground facilities, Sewage, Frost penetration, Earthwork, Equipment, Waterproofing, Ground water, Clays, Saturation.

39-940
Scientific and engineering studies: underwater acoustics in the Arctic. Newport, RI, U.S. Naval Underwater Systems Center, [1984], var.p., Refs. passim.
For selected papers see 18-21188, 22-25263, 36-2093, 38-530, 38-705, and 39-941 through 39-950.
Underwater acoustics, Ice acoustics, Subglacial observations, Sound transmission, Wave propagation, Ice bottom surface, Surface roughness, Acoustic scattering, Sea ice, Research projects, Arctic Ocean.

39-941
U.S. Navy Underwater Sound Laboratory's Arctic research program (1958-1962).
Wilson, D.P., et al, Scientific and engineering studies: underwater acoustics in the Arctic, Newport, RI, U.S. Naval Underwater Systems Center, [1984], 37p., Reprint of U.S. Underwater Sound Laboratory, Report No.837A, Sep. 5, 1967. Refs. passim.
Democh, E.G.
Sound transmission, Underwater acoustics, Subglacial observations, Ice acoustics, Ice conditions, Sea ice, Research projects, Arctic Ocean.

39-942
TRISTEN/FRAM II cruise report, East Arctic, April 1980.
DiNapoli, F.R., et al, Scientific and engineering studies: underwater acoustics in the Arctic, Newport, RI, U.S. Naval Underwater Systems Center, [1984], 24p., Reprint of U.S. Naval Underwater Systems Center, Technical document, No.6457, Apr. 13, 1981. 4 refs.
Underwater acoustics, Subglacial observations, Sound transmission, Ice mechanics, Drift stations, Ships, Arctic Ocean.

39-943
FRAM II single channel ambient noise statistics.
Dwyer, R.F., Scientific and engineering studies: underwater acoustics in the Arctic, Newport, RI, U.S. Naval Underwater Systems Center, [1984], 29p., Reprint of U.S. Naval Underwater Systems Center, Technical document, No.6583, Nov. 25, 1981.
Sound transmission, Underwater acoustics, Subglacial observations, Ice mechanics, Ice conditions, Sea ice, Drift stations, Ice cracks, Noise (sound), Ships, Arctic Ocean.

39-944
Acoustic problems.
Dwyer, R.F., Scientific and engineering studies: underwater acoustics in the Arctic, Newport, RI, U.S. Naval Underwater Systems Center, [1984], 2p., Extracted from: U.S. Naval Underwater Systems Center, Technical document, No.6591, Feb. 5, 1982, p.20-21. 6 refs.
Sound transmission, Underwater acoustics, Noise (sound), Detection, Statistical analysis, Arctic Ocean.

39-945
Arctic ambient noise statistical measurement results and their implications to sonar performance improvements.
Dwyer, R.F., Scientific and engineering studies: underwater acoustics in the Arctic, Newport, RI, U.S. Naval Underwater Systems Center, [1984], 15p., Reprint of U.S. Naval Underwater Systems Center, Reprint report, No.6739, May 5, 1982. 4 refs.
Sound transmission, Underwater acoustics, Noise (sound), Subglacial observations, Fast ice, Spectroscopy, Statistical analysis, Arctic Ocean.

39-946
Evaluation of Arctic transmission loss models.
Deavenport, R.L., et al, Scientific and engineering studies: underwater acoustics in the Arctic, Newport, RI, U.S. Naval Underwater Systems Center, [1984], 21p., Reprint of U.S. Naval Underwater Systems Center, Technical memorandum, No.82-1160A, Dec. 13, 1982. 24 refs.
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Scattering, Underwater acoustics, Subglacial observations, Sound transmission, Ice bottom surface, Surface roughness, Mathematical models, Arctic Ocean.

39-947
Ray-mode equivalence in the Arctic sound channel.
Mellen, R.H., Scientific and engineering studies: underwater acoustics in the Arctic, Newport, RI, U.S. Naval Underwater Systems Center, [1984], 20p., Presented at the 106th Meeting of the Acoustical Society of America, Special session on Arctic Acoustics, Nov. 8-10, 1983, San Diego, CA. 4 refs.
Scattering, Underwater acoustics, Sound transmission, Wave propagation, Ice bottom surface, Surface roughness, Theories, Arctic Ocean.

39-948
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Nielsen, R., Potter, D., Stocklin, P.L.
Underwater acoustics, Subglacial observations, Sound transmission, Wave propagation, Drift stations, Ships, Arctic Ocean.

39-949
TRISTEN/FRAM IV Arctic ambient noise measurements.
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Sound transmission, Underwater acoustics, Wave propagation, Subglacial observations, Experimentation, Acoustics, Drift stations, Ships, Arctic Ocean.

39-950
Underwater acoustics in the Arctic Ocean.
Mellen, R.H., et al, Scientific and engineering studies: underwater acoustics in the Arctic, Newport, RI, U.S. Naval Underwater Systems Center, [1984], 6p., To be presented at the NATO Advanced Study Institute on Adaptive Methods in Underwater Acoustics, Lüneberg, Germany, July 30-Aug. 10, 1984. 6 refs.
DiNapoli, F.R.
Scattering, Underwater acoustics, Ice bottom surface, Sound transmission, Wave propagation, Surface roughness, Statistical analysis, Ice water interface, Arctic Ocean.

39-951
Winter research. *Car and driver*, Dec. 1982, 28(6), p.59-65.
Vehicles, Cold weather operation, Snow cover effect, Traction, Trafficability.

39-952
Microthermal observations in Arctic vegetation.
Hansen, K., *Denmark. Kommissionen for videnskabelige undersögelser i Grönland. Meddelelser om Grönland*, 1973, 194(6), 32p., 12 refs.
Vegetation, Plant ecology, Thermal regime, Growth, Mountains, Diurnal variations, Temperature gradients, Air temperature, Greenland.

39-953
McGill Axel Heiberg Station with an inventory as of June 1983.
Adams, P., Mar. 1984, 7p. + appends., Unpublished manuscript submitted to Centre for Northern Studies, McGill University, Montreal. 8 refs.
Stations, Logistics, Houses, Utilities, Electricity, Exploration, Glaciers, Canada—Northwest Territories—Axel Heiberg Island.

39-954
Diatom distribution and paleoceanographic reconstruction in the southern ocean—present and last glacial maximum.
Burckle, L.H., *Marine micropaleontology*, Sept. 1984, 9(3), p.241-261, Refs. p.259-261.
Paleobotany, Sea ice distribution, Glaciation, Ice cores, Algae.
Diatom assemblage and preservational data are used to reconstruct paleoceanographic conditions at the last glacial maximum (18,000 yrs BP) in the southern ocean. From these data, the following points can be made about the last glacial maximum in this region. (1) Contraction and slight northern shift of the belt of well preserved diatoms appears to be related to the northward shift of late spring/early summer sea ice cover. (2) Presence of open-ocean, though poorly preserved, diatom assemblages to the south of this belt strongly suggests that, during many summers, large areas of the southern ocean were ice-free. (3) The distribution of the *Nitzschia kerguelensis* factor, both in surface sediments and at the last glacial maximum, indicates that the gyre systems, particularly the Weddell Gyre, were intensified during glacial times. (4) Although data are sparse in the higher-latitude southern Atlantic, there is an indication that the Weddell Polynya also existed during glacial times, although it was shifted a few degrees northward. (Auth.)

39-955
Foundations of light-weight buildings on permafrost. [Fundamenty legkikh zdanii na vechnomerzlykh gruntakh],
Gerasimov, A.S., Leningrad, Strolizdat, 1984, 152p., In Russian with English table of contents enclosed. 65 refs.
Frost heave, Residential buildings, Industrial buildings, Foundations, Construction materials, Permafrost beneath structures, Piles, Permafrost physics, Permafrost control, Deformation.

39-956
Microbe associations in forest biogeocenoses. [Mikrobnye assotsiatsii v lesnykh biogeotsenozakh],
Gukasian, A.B., ed, Krasnoyarsk, 1983, 122p., In Russian. For selected papers see 39-957 through 39-960. Refs. passim.
Meadow soils, Forest soils, Nutrient cycle, Litter, Bacteria, Soil microbiology, Taiga, Soil composition, Alpine landscapes, Podsol, Cryogenic soils.

39-957
Space-time relations of fermentative activity indices and their connection with hydrothermal conditions in the soils of western Sayan. [Prostranstvenno-vremennye sootnosheniia pokazatelei fermentativnoi aktivnosti i ikh sviaz' s gidrotermicheskimi usloviiami pochv Zapadnogo Saiana],
Rukosueva, N.P., Mikrobnye assotsiatsii v lesnykh biogeotsenozakh (Microbe associations in forest biogeocenoses) edited by A.B. Gukasian, Krasnoyarsk, 1983, p.33-42, In Russian. 11 refs.
Soil microbiology, Meadow soils, Alpine landscapes, Cryogenic soils, Taiga.

39-958
Microflora in the podsolized soils of northern taiga in the Taz-Yenisey interfluve. [Mikroflora podzolistykh pochv severnoi taigi Taz-Eniseiskogo mezhdurech'ia],
Vishniakova, Z.V., et al, Mikrobnye assotsiatsii v lesnykh biogeotsenozakh (Microbe associations in forest biogeocenoses) edited by A.B. Gukasian, Krasnoyarsk, 1983, p.46-56, In Russian. 4 refs.
Korsunov, V.M.
Taiga, Soil composition, Soil microbiology, Litter, Forest soils, River basins, Cryogenic soils.

39-959
Peculiarities of *Lipomyces* distribution in the mountain-taiga soils of Tuva. [Osobennosti rasprostraneniia lipomitsetov v gorno-taezhnykh pochvakh Tuvy],
Abramenko, N.I., Mikrobnye assotsiatsii v lesnykh biogeotsenozakh (Microbe associations in forest biogeocenoses) edited by A.B. Gukasian, Krasnoyarsk, 1983, p.69-73, In Russian. 3 refs.
Forest soils, Litter, Podsol, Soil microbiology, Bacteria, Nutrient cycle, Alpine landscapes, Taiga.

39-960
Microflora and biologic activity in the litter of pine forests of the Angara River area. [Mikroflora i biologicheskaia aktivnost' podstilok sosnovykh lesov Priangar'ia],
Bugakova, T.M., et al, Mikrobnye assotsiatsii v lesnykh biogeotsenozakh (Microbe associations in forest biogeocenoses) edited by A.B. Gukasian, Krasnoyarsk, 1983, p.101-115, In Russian. 21 refs.
Buzykin, A.I.
Taiga, Forest soils, Litter, Permafrost distribution, Soil microbiology, Nutrient cycle, Cryogenic soils.

39-961
Peculiarities of seismic effect of charge detonation in frozen ground. [Osobennosti seismicheskogo deistviia vzryva zariadov v merzlykh gruntakh],
Glozman, L.M., et al, Deĭstvie vzryva zariadov v gruntakh i gornykh porodakh (Effect of charge detonation in grounds and in rocks) edited by N.V. Dronov, Frunze, Ilim, 1984, p.40-45, In Russian. 2 refs.
Shteĭnbakh, N.A., Litvinov, V.A.
Explosives, Earthwork, Excavation, Blasting, Permafrost physics, Wave propagation, Seismic velocity, Frozen fines, Ground ice, Tests, Laboratory techniques.

39-962
Strength and dynamic characteristics of air-cushion boats. [Prochnostnye i dinamicheskie kharakteristiki katera na vozdushnoĭ podushke],
Leshchinskiĭ, A.L., et al, *Sudostroenie*, 1983, No.32, p.30-33, In Russian. 2 refs.
Bugaenko, V.V., Klimenko, V.F., Lavrov, N.N.
Air cushion vehicles, Ships, All terrain vehicles, Amphibious vehicles.

39-963
Improvements in planning the development of merchant marine. [Sovershenstvovanie planirovaniia razvitiia morskogo flota],
Panin, IU.I., ed, Leningrad, Transport, 1983, 88p., In Russian. For selected papers see 39-964 through 39-967. Refs. passim.
Helicopters, Transportation, Ice navigation, Air cushion vehicles, Icebreakers, Cargo, Cost analysis, Arctic Ocean.

39-964
Organization and economic efficiency of feeder transport of cargo in the Arctic. [Organizatsiia i ekonomicheskaia effektivnost' fidernykh perevozok gruzov v Arktike],
Egorov, N.P., Sovershenstvovanie planirovaniia razvitiia morskogo flota (Improvement of planning the development of merchant marine) edited by IU.I. Panin, Leningrad, Transport, 1983, p.43-47, In Russian.
Transportation, Ice navigation, Cargo, Helicopters, Air cushion vehicles, Icebreakers, Cost analysis, Arctic Ocean.

39-965
Improving the performance of heavy icebreakers in the Arctic. [Sovershenstvovanie raboty lineĭnykh ledokolov v Arktike],
Dolban, V.A., et al, Sovershenstvovanie planirovaniia razvitiia morskogo flota (Improvement of planning the development of merchant marine) edited by IU.I. Panin, Leningrad, Transport, 1983, p.47-50, In Russian.
Khristoliubov, V.V.
Ice navigation, Icebreakers, Arctic Ocean.

39-966
Distribution of the per-ton fee for icebreaker services in the Arctic. [Raspredelenie potonnogo sbora za uslugi ledokolov v Arktike],
Bazanova, E.V., Sovershenstvovanie planirovaniia razvitiia morskogo flota (Improvement of planning the development of merchant marine) edited by IU.I. Panin, Leningrad, Transport, 1983, p.50-51, In Russian.
Ice navigation, Ice breaking, Icebreakers, Cost analysis.

39-967
Compilation of diagrams for the performance of a fleet in the Arctic. [Printsip postroeniia grafika raboty flota v arkticheskikh ralonakh],
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Batskikh, IU.M.
Cargo, Ice navigation, Ships, Icebreakers, Transportation.

39-968
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Zhizhchenko, B.P., Moscow, Nedra, 1984, 113p., In Russian with English table of contents enclosed. 22 refs.
Natural gas, Hydrates, Clathrates, Origin, Migration, Marine deposits, Theories.

39-969
Storm surges in the Beaufort and Chukchi Sea.
Kowalik, Z., *Journal of geophysical research*, Nov. 20, 1984, 89(C6), p.10,570-10,578, 36 refs.
Storms, Ice air interface, Ice water interface, Mathematical models, Beaufort Sea, Chukchi Sea.

39-970
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Colony, R., et al, *Journal of geophysical research*, Nov. 20, 1984, 89(C6), p.10,623-10,629, 5 refs.
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Sea ice, Ice floes, Drift, Ocean currents.

39-971
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Weeks, W.F., et al, *Ocean science and engineering*, 1984, 9(2), MP 1808, p.135-198, Refs. p.191-198.
Cox, G.F.N.
Ice strength, Ice mechanics, Drift, Sea ice, Ice crystal structure, Rheology, Compressive properties, Ice salinity, Pressure ridges, Ice loads, Ice conditions, Offshore structures.

39-972
Till fabric and recent morainal landscape of Iceland. [Till fabric i et recent bundmoraenelandskab, Island],
Krüger, J., et al, *Dansk geologisk forening, Copenhagen. Årsskrift*, Jan. 25, 1981, 1980, p.19-28, In Danish with English summary. 29 refs.
Thomsen, H.H.
Glacial deposits, Moraines, Landscape development, Glacial geology, Iceland—Myrdalsjokull.

39-973
Glacial stratigraphy east of the Main Stationary Line of Denmark. [Glacialstratigrafi i Danmark ost for Hovedopholdslinien],
Houmark-Nielsen, M., *Dansk geologisk forening, Copenhagen. Årsskrift*, Jan. 25, 1981, 1980, p.61-76, In Danish with English summary. Refs. p.74-76.
Glacial geology, Geomorphology, Glacial deposits, Stratigraphy, Paleoclimatology, Tectonics, Fossils, Denmark.

39-974
Till fabric processes in the recent dead ice landscape of Höfdabrekkujökull, Iceland. [Processer og till fabric i et recent dödislandskab ved Höfdabrekkujökull, Island],
Krüger, J., *Dansk geologisk forening, Copenhagen. Årsskrift*, July 1982, 1981, p.45-56, In Danish with English summary. 20 refs.
Moraines, Glacial deposits, Geomorphology, Landscape development, Topographic features, Hummocks, Outwash, Ice caves, Mudflows.

39-975
Thermal metamorphism of antarctic sea ice. [O termicheskom metamorfizme morskikh l'dov Antarktiki],
Nazintsev, IU.L., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1984, No.105, p.23-29, In Russian. 7 refs.
Fedotov, V.I.
Albedo, Sea ice, Ice melting, Snow cover effect, Ice thermal properties, Solar radiation, Antarctica—Alasheyev Bight.

Monthly measurements of global radiation carried out for a year, from January through December, at Molodezhnaya Station, and six stages of ice cover condition observed during November through February on the Alasheyev Bight coast, are tabulated and discussed. Solar radiation and snow cover are found to play an important role in the rate of deterioration of ice. Data shows that in January the surface albedo constitutes 70 to 80% of the incoming global radiation on snow covered fast ice, 40 to 60% on ice without snow, and 18 to 32% on puddles covered with 3 to 5 cm of ice.

39-976
Glaciological and geocryological studies on King George Island. [Gliatsiologicheskie i geokriologicheskie issledovaniia na o-ve King-Dzhordzh],
Vtiurin, B.I., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten'*, 1984, No.105, p.33-37, In Russian.
Moskalevskiĭ, M.IU.
Ice sheets, Glacier ice, Snow surveys, Geocryology, King George Island, Antarctica—Fildes Peninsula.
Studies of glacial and nival processes on King George Island, and surveys conducted on Fildes Peninsula, and Admiralty Bay, from December 30, 1979 to February 20, 1980, are reported. All-terrain vehicles were used on ice shield routes and a boat in crossing to the Nelson Island ice dome. Snow density and glacier thickness were measured; temperature and structure of snow-firn-ice strata were studied in marginal parts of the ice shield, as well as the dynamics of an ice dome edge, old and recent moraines, ground ice, and the role of snow cover on the thaw depth. Glacier motion in the summer months was found not to exceed 1.5 cm/day, or 5-5.5 m/yr. Cryogenic rock structures are described and classified. Cryogenic relief was mapped on Fildes Peninsula.

39-977
Biogenic elements in Schirmacher Ponds in natural conditions and following human activities. [Biogennye elementy v vodoemakh oazisa Shirmakhera v prirodnykh usloviiakh i pod antropogennym vozdeistviem],
Kaup, E.B., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten'*, 1984, No.105, p.42-48, In Russian. 13 refs.
Ice composition, Antarctica—Schirmacher Ponds.
From data collected in Schirmacher Ponds, significantly high concentrations of biogenic elements in atmospheric precipitation and meltwater are reported. Chemical analyses of bottom sediments, ice cover, and water contaminated by human activity show high concentrations of phosphates, nitrates and ammonia.

39-978
Evaluating the accuracy of ship position fixing by icebergs. [K voprosu otsenki tochnosti opredeleniia mesta sudna po aĭsbergam],
Utusikov, IU.D., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten'*, 1984, No.105, p.64-69, In Russian. 3 refs.
Icebergs, Ice navigation.
To overcome the difficulty of establishing the exact position of a ship navigating among icebergs, calculations for error determination of radar measurements, and their graphic execution, are presented.

39-979
Second All-Union Symposium "Meteorological studies in the Antarctic". [Vtoroĭ Vsesoiuznyĭ simpozium "Meteorologicheskie issledovaniia v Antarktike"],
Burova, L.P., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten'*, 1984, No.105, p.78-81, In Russian.
Ice, Snow.
A symposium commemorating 25 years of Soviet research in the Antarctic, held October 19-22, 1981, in Leningrad, is reported. The topics discussed were the antarctic climate and its fluctuations, climatic monitoring, atmospheric structure and circulation, glaciological studies, meteorological conditions, acclimatization in man, and new methods for meteorological investigations. Recommendations are listed.

39-980
Submarine tanker navigation in the Arctic.
Clautice, W.G., et al, *Marine Technology Society Journal*, Sep. 1974, 8(8), p.29-37, 22 refs.
Sheets, H.E.
Subglacial navigation, Tanker ships, Submarines, Petroleum transportation, Crude oil, Arctic Ocean.

39-981
Changes in the proglacial area of Breidamerkurjökull, southeastern Iceland: 1890-1980.
Price, R.J., *Jökull, 1982, No.32, p.29-35, 23 refs.*
Glacier oscillation, Glacial deposits, Glacial hydrology, Landforms, Meltwater, Glacier melting, Mapping, Aerial surveys, Statistical analysis, Photography, Iceland—Breidamerkurjökull.

39-982
Stratigraphy and structure of a coastal sediment wedge of glacial origin inferred from sparker measurements in glacial Lake Jökulsárlón in southeastern Iceland.
Boulton, G.S., et al, *Jökull*, 1982, No.32, p.37-47, 13 refs.
Harris, P.W.V., Jarvis, J.
Glacial lakes, Glacier melting, Glacial deposits, Glacier oscillation, Limnology, Ice edge, Bottom sediment, Iceland—Jökulsárlón.

39-983
Notes on the Katla volcanoglacial debris flows.
Jónsson, J., *Jökull*, 1982, No.32, p.61-68, 23 refs.
Glacial deposits, Glacial lakes, Subglacial caves, Magma, Volcanoes, Unsteady flow, Glacial rivers, Iceland—Katla.

39-984
Satellite glaciology of Iceland.
Williams, R.S., Jr., *Jökull, 1983, No.33, p.3-12, Refs.* p.10-12.
Glacier surveys, Remote sensing, Glaciology, Glacier oscillation, Geomorphology, Ice edge, Mapping, LANDSAT.

39-985
Natural calorimeter at Grímsvötn; an indicator of geothermal and volcanic activity.
Björnsson, H., *Jökull*, 1982, No.32, p.13-18, 16 refs.
Glacial hydrology, Geothermal thawing, Subglacial drainage, Glacier melting, Heat flux, Heat transfer, Volcanoes, Magma, Temperature measurement, Measuring instruments, Unsteady flow.

39-986
Chemical monitoring of jökulhlaup water in Skeidara and the geothermal system in Grímsvotn, Iceland.
Steinthórsson, S., et all, *Jökull*, 1982, No.32, p.73-86, 27 refs.
Óskarsson, N.
Glacial hydrology, Glacial rivers, Geothermal thawing, Hydrothermal processes, Glacial caves, Water temperature, Water chemistry, Meltwater, Iceland.

39-987
Quaternary alpine glaciation and marine erosion in Iceland.
Sigbjarnarson, G., *Jökull*, 1982, No.32, p.87-98, 26 refs.
Alpine glaciation, Geomorphology, Mountain glaciers, Alpine landscapes, Landforms, Glacial erosion, Topographic features, Paleoclimatology, Quaternary deposits, Glacier thickness, Iceland.

39-988
Resurvey of the margins of Gljúfurarjökull and the chronology of recent deglaciation.
Caseldine, C.J., *Jökull*, 1982, No.32, p.111-118, 24 refs.
Glacier surveys, Ice edge, Glacial deposits, Glacier oscillation, Moraines, Lichens, Mapping, Statistical analysis, Paleoclimatology, Iceland—Gljúfurarjökull.

39-989
Floods and flood danger in Iceland.
Rist, S., *Jökull*, 1982, No.32, p.119-132.
Flood control, Runoff, Glacial rivers, Glacial hydrology, Meltwater, Damage, Protection.

39-990
Snow avalanches in Iceland in the winters 1980-81 and 1981-82. [Snjóflód á Íslandi veturinn 1980-81, 1981-1982],
Jónsson, H.H., *Jökull*, 1982, No.32, p.149-154, In Icelandic with English summaries. Consists of two articles.
Avalanche formation, Roads, Trafficability, Seasonal variations, Statistical analysis, Winter, Iceland.

39-991
Radiation budget in the Alpine region. [Zum Strahlungshaushalt im Alpenraum],
Müller, H., *Zurich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1984, No.71, 167p., In German with French and English summaries. Refs. p.156-165.
Radiation balance, Glacier melting, Meltwater, Solar radiation, Albedo, Runoff, Firn, Ice optics, Snow optics, Cloud cover, Variations.

39-992
Studies on formation and range of ice avalanches. [Untersuchungen über Entstehungsbedingungen und Reichweiten von Eislawinen],
Alean, J.-C., *Zurich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1984, No.74, 217p., In German with English summary. Refs. p.211-216.
Icefalls, Avalanche formation, Avalanche deposits, Calving, Ice mechanics, Velocity, Avalanche tracks, Ice dams, Firn, Friction.

39-993
Analysis of side scan sonar sea bed imagery from repeated surveys off Pullen Island—Beaufort Sea.
Shearer, J., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, 1979, No.151-1, 28p. + appends.
Ice scoring, Ocean bottom, Ice solid interface, Ice action, Pressure ridges, Acoustic measurement, Radio echo sounding.

39-994
Trace metal characterization in berite for drilling operations.
Applied Earth Science Consultants, Inc., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, 1980, No.157-1, 72p. + appends., Refs. p. (V-1)-(V-9).
Drilling fluids, Metals, Chemical analysis, Offshore drilling, Canada.

39-995
M.V. *Arctic* instrumentation and data collection system for ship operations in ice: system operating and user's manual, Vol. 1 (operating instructions).
Boteler, D.J., et al, *Transport Canada. Transportation Development Centre. Report*, May 1981, TDC 4127, Transport Canada, TP 3097, var.p. Microlog No. 83-0851.
Benjamin, A., German, J.G., Fenco Consultants, Ltd.
Ice navigation, Ice breaking, Equipment, Instruments, Manuals, Ice pressure, Data processing, Impact strength.

39-996
M.V. *Arctic* instrumentation and data collection system for ship operations in ice: system operating and user's manual, Vol.2 (hardware manual).
Boteler, D.J., et al, *Transport Canada. Transportation development Centre. Report*, May 1981, TDC 4127, Transport Canada, TP 3097, var.p. Microlog No. 83-0852.
Benjamin, A., German, J.G., Fenco Consultants, Ltd.
Ice navigation, Ice breaking, Instruments, Data processing, Manuals.

39-997
M.V. *Arctic* instrumentation and data collection system for ship operations in ice: system operating and user's manual, Vol.3 (software manual).
Boteler, D.J., et al, *Transport Canada. Transportation Development Centre. Report*, May 1981, TDC 4127, Transport Canada, TP 3097, 76p. + appends., Microlog No. 83-0853, With French summary.
Benjamin, A., German, J.G., Fenco Consultants, Ltd.
Icebreakers, Ice navigation, Ice pressure, Ice breaking, Equipment, Manuals, Instruments, Computer applications.

39-998
Snowmobiles as utility vehicles in the Arctic: current performance and prospects for improvement. Final report.
Poole, P.J., *Transport Canada. Transportation Development Centre. Report*, May 1982, TDC 4281, Transport Canada, TP 3652, 134p., Microlog No. 0981, With French summary. 7 refs.
Snow vehicles, Cold weather performance, Cold weather operation, Design.

39-999
M.V. *Arctic* special report on Lake Melville probe.
Dick, R.A., et al, *Transport Canada. Transportation development Centre. Report*, Aug. 1982, TDC 4742, Transport Canada, TP 3809E, 32p., Microlog No. 83-0958, With French summary.
Thompson, E.V., Cheung, H.C., Melville Shipping, Ltd.
Ice navigation, Ice conditions, Ice breaking, Icebreakers, Lake ice, Ice loads, Equipment, Instruments, Impact strength, Bubbling.

39-1000
SSACV icebreaking LNG tanker: feasibility study.
Dadachanji, N., et al, *Transport Canada. Transportation Development Centre. Report,* Apr. 1982, TDC 4271, Transport Canada, TP 3423, 32p., Microlog No. 83-0983, With French summary. 32 refs.
Markham, P. de L., German and Milne, Inc.
Icebreakers, Ice breaking, Tanker ships, Air cushion vehicles, Models.

39-1001
Concepts for the integration of a fluid cushion into the bow of a ship.
Dadachanji, N., et al, *Transport Canada. Transportation Development Centre. Report,* Jan. 1982, TDC 4455, Transport Canada, TP 3407E, 28p. + appends., Microlog No. 83-0968, With French summary. 5 refs.
Markham, P. de L., German and Milne, Inc.
Icebreakers, Air cushion vehicles, Hydraulic jets, Ice cover thickness, Water cushion.

39-1002
Concepts for icebreakers with integral fluid cushion bow.
Livingstone, F.R., et al, *Transport Canada. Transportation Development Centre. Report,* Dec. 1981, TDC 4293, Transport Canada, TP 3405E, 85p., Microlog No. 83-0974, With French summary. 12 refs.
George, M.F.
Icebreakers, Air cushion vehicles, Hydraulic jets, Ice navigation, Ice breaking.

39-1003
Water supply review and snow survey summary, 1981-82 (Alta.).
Alberta River Forecast Centre and Survey Branch, [1982:], 25p. + appends. Microlog No. 83-0737.
Water supply, Snow surveys, Precipitation (meteorology), Snow water equivalent, Snow depth, River basins, Mountains, Forecasting, Snowmelt, Runoff, Water storage, Meteorological factors, Canada—Alberta.

39-1004
Current, temperature, and salinity beneath George VI Ice Shelf, Antarctica.
Loynes, J., et al, *Deep-sea research,* Sep. 1984, 31(9), p.1037-1055, 20 refs.
Potter, J.R., Paren, J.G.
Ocean currents, Tidal currents, Sea ice, Ice cover effect, Antarctica—George VI Ice Shelf.
Speed, direction, temperature, and conductivity were recorded from February to July 1980 within the thermocline near the northern ice front of George VI Ice Shelf. There were no significant changes in temperature or salinity from summer to winter. Fluctuations of around 10 and 40 days periodicity were observed in the current and temperature, and similar variations are evident in meteorological observations. Temperature oscillations were observed at tidal frequencies and may be caused by horizontal advection or internal wave motion. The horizontal kinetic energy is dominated by low-frequency periods (46%), semi-diurnal tides (40%), and diurnal tides (10%). Tidal ellipses have their major axes aligned along George VI Sound and are described anticlockwise. Terdiurnal constituents, which may be a particular effect in the response of a floating ice shelf to tide generating forces, were observed. The M2 constituent was highly suppressed. Both the amplitude of M2 current and the speed of the mean flow decreased sharply in mid-April. These changes may be related to increasing sea-ice cover with the onset of winter. The mean flow is directed eastwards across the narrow channel, parallel to the ice front and at right angles to the major axes of the tidal ellipses. We speculate on reasons for this unusual behaviour. (Auth.)

39-1005
Water masses and circulation in the region of Prydz Bay, Antarctica.
Smith, N.R., et al, *Deep-sea research,* Sep. 1984, 31(9), p.1121-1147, 62 refs.
Zhaoqian, D., Kerry, K.R., Wright, S.
Ocean currents, Sea water freezing, Sea ice, Ice cover effect, Antarctica—Prydz Bay.
Hydrographic and expendable bathythermograph (XBT) measurements are used to describe the characteristics and circulation of the water within and to the north of Prydz Bay. Surface waters in Prydz Bay are highly variable and are linked to local ice conditions. The isolation of a warm surface feature corroborates previous suggestions of a permanent high surface temperature anomaly. Water mass analysis reveals both high- and low-salinity varieties of continental shelf water and a significant Ice Shelf Water mode. Low-salinity shelf water is confined to the West Ice Shelf region and high-salinity shelf water to the central and western areas of Prydz Bay. The Ice Shelf Water mass is related to freezing beneath the Amery Ice Shelf and to prolonged isolation due to topographic restraints. Geostrophic calculations show predominantly westward flow adjacent to the continental rise and a large cyclonic gyre in Prydz Bay. The off-shelf pattern is consistent with previous calculations from hydrographic data and with iceberg and buoy observations. The water masses and circulation within Prydz Bay resemble those of similar sites within the Weddell and Ross seas but there are significant differences. (Auth. mod.)

39-1006
D/E *Gizhiga* operations off Hobbs Coast and organization of the new antarctic station Russkaya. [Plavanie D/E "Gizhiga" u berega Khobsa i otkrytie novoi antarkticheskoi stantsii Russkoi],
Kornilov, N.A., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten',* 1984, No.106, p.5-12, In Russian. 2 refs.
Leont'ev, E.B., Denisov, A.S.
Icebreakers, Ice cover thickness, Sea ice, Ice navigation, Antarctica—Russkaya Station, Antarctica—Hobbs Coast.
Details of the construction of Russkaya Station on Hobbs Coast in 1980 are discussed, and the ice distribution and navigation conditions between 130-140 W and 72-74 S are shown on a chart. The most favorable conditions for the passage through ice, on the way toward Cape Burks, were found in the polynyas along 136 W. Ice dimensions at different points of the voyage are given. A topographic map of Russkaya Station is included.

39-1007
Study of the granulometric composition of ice core trace elements at Vostok Station by an electrooptical method. [Izuchenie granulometricheskogo sostava mikrochastits v ledianom kerne stantsii Vostok elektrooptricheskim metodom],
Barkov, N.I., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten',* 1984, No.106, p.26-33, In Russian. 15 refs.
Ice cores, Ice composition, Antarctica—Vostok Station.
Study of ice cores obtained at Vostok Station show a significant relationship between the content of microparticles and the depth of the borehole. At 485 m, most trace elements have a diameter in the range of 0.4-2.5 mkm, the most frequent diameter being 1.1 mkm. At 885 m, microparticles with a diameter range of 0.1-1.8 are prevalent, the majority having a diameter of 0.6 mkm.

39-1008
Antarctic ice berths. [O ledianykh prichalakh v Antarktide],
Dubrovin, L.I., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten',* 1984, No.106, p.33-41, In Russian. 11 refs.
Preobrazhenskaia, M.A.
Moorings, Ice navigation, Glacier ablation, Antarctica—Mirnyy Station, Antarctica—Molodezhnaya Station.
Danger factors of ice navigation and of mooring on icy coasts are discussed, and the necessary conditions for safety, such as the minimum water depth and the optimum height of the ice berths, particularly for Soviet ships, are reviewed. Charts with locations of natural ice berths at Molodezhnaya Station, and the coastline at Mirnyy Station in 1957 and 1981, with marking of mooring places in the ice barrier, are presented.

39-1009
Determination of the bearing capacity of antarctic ice. [Nekotorye aktual'nye voprosy opredeleniia gruzopod"emnosti antarkticheskikh l'dov],
Kornilov, N.A., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten',* 1984, No.106, p.41-46, In Russian. 11 refs.
Nazintsev, IU.A.
Ice cover strength, Ice breaking.
A review is presented of studies of ice cover resistance to heavy loads under field and laboratory conditions. Detailed instructions for successful experimentation—measuring of the thickness and temperature of ice layers and careful registration of cave-ins under pressure, among others—are given.

39-1010
Radiobuoys on drifting icebergs. [Radiobui na dreifuiushchikh aisbergakh],
Leont'ev, E.B., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten',* 1984, No.106, p.52-54, In Russian.
Seleznev, P.V.
Icebergs.
Installation of three radiobuoys on icebergs within the optimum range of length (500-1200 m) and width (300-500 m) is described. Coordinates, time of day, buoy number, and dimensions of the icebergs carrying the buoys, are tabulated. The operation, carried out on March 12, 1980, by ship and helicopter, was completed in two hours.

39-1011
Isotopic variations of hydrogen, carbon and nitrogen in the lower plant forms of the Schirmacher Ponds (East Antarctica). [Izotopnye variatsii vodoroda, ugleroda i azota v nizshikh rasteniiakh oazisa Shirmakhera (Vostochnaia Antarktida)],
Strauch, G., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biulleten',* 1984, No.106, p.54-59, In Russian. 11 refs.
Maass, I., Runge, A., Mühle, K., Hendel, D.
Algae, Lichens, Mosses, Antarctica—Schirmacher Ponds.
Results of isotope studies of lichens, mosses and algae of the Schirmacher Oasis are given and peculiarities of the habitats which influence the isotope contents of the plants are discussed.

39-1012
United States Arctic interests: the 1980s and 1990s.
Westermeyer, W.E., ed, New York, Springer-Verlag, 1984, 369p., Refs. passim. For selected papers see 39-1013 through 39-1016.
Shusterich, K.M., ed.
Natural resources, Marine transportation, Ice navigation, Military research, Environmental protection, Tundra, Transportation, Logistics, Ecosystems, Arctic Ocean, United States—Alaska.

39-1013
Transportation of Arctic energy resources.
Westermeyer, W.E., United States Arctic interests: the 1980s and 1990s. Edited by W.E. Westermeyer and K.M. Shusterich, New York, Springer-Verlag, 1984, p.105-133, Numerous refs.
Marine transportation, Natural resources, Ice navigation, Icebreakers, Pipelines, Beaufort Sea.

39-1014
United States and the role of science in the Arctic.
Weller, G., United States Arctic interests: the 1980s and 1990s. Edited by W.E. Westermeyer and K.M. Shusterich, New York, Springer-Verlag, 1984, p.158-177, 23 refs.
International cooperation, Natural resources, Ice conditions, Logistics, Research projects, Arctic Ocean.

39-1015
Arctic environmental quality.
Brown, W.Y., United States Arctic interests: the 1980s and 1990s. Edited by W.E. Westermeyer and K.M. Shusterich, New York, Springe.-Verlag, 1984, p.178-198, 44 refs.
Natural resources, Environmental protection, Tundra, Solar radiation, Pollution, Ecosystems, Environmental impact, Biomass, Beaufort Sea.

39-1016
United States security interests in the Arctic.
Johnson, G.L., et al, United States Arctic interests: the 1980s and 1990s. Edited by W.E. Westermeyer and K.M. Shusterich, New York, Springer-Verlag, 1984, p.268-294, 61 refs.
Bradley, D., Winokur, R.S.
Military research, Ice navigation, Research projects, Military facilities, Submarines, Arctic Ocean.

39-1017
Frost weathering and the saturation of coastal rocks.
Trenhaile, A.S., et al, *Earth surface processes and landforms,* July-Aug. 1984, 9(4), p.321-331, Refs. p.329-331.
Mercan, D.W.
Frost weathering, Frozen rocks, Frost action, Saturation, Shores, Sea water, Temperature effects, Humidity.

39-1018
Using parabolas to describe the cross-sections of glaciated valleys.
Wheeler, D.A., *Earth surface processes and landforms,* July-Aug. 1984, 9(4), p.391-394, 6 refs.
Glacier surfaces, Valleys, Geocryology.

39-1019
Navigation of Arctic polar submarines.
Lyon, W.K., *Journal of navigation,* May 1984, 37(2), p.155-179, 7 refs.
Ice navigation, Sea ice distribution, Submarines, Acoustic measurement, Ice conditions.

39-1020
Investigation of seasonal frost mounds in the North Fork Pass area, interior northern Yukon Territory: preliminary results.
Pollard, W.H., *Geoscope,* 1983, 12(2), p.11-23, With French summary. Refs. p.21-23.
Frost mounds, Geocryology, Suprapermafrost ground water, Landforms, Freezing, Active layer, Seasonal variations, Frost action.

39-1021
Snow in geography.
Adams, W.P., *The monograph,* 1983, 34(2), p.10-17, 21+ refs.
Snow surveys, Snow cover, Environments, Snowfall, Snowdrifts, Measuring instruments.

39-1022
Shear strength and adhesion properties of saline ice. [Suolaisen jään leikkauslujuus ja tartunta teräkseen],
Hänninen, J., et al, *Finland. Technical Research Centre. Research reports,* 1984, No.286, 35p., In Finnish with English summary. 12 refs.
Lehmus, E., Oksanen, P.
Salt ice, Shear strength, Ice strength, Ice adhesion, Ice solid interface, Cold weather construction, Ice salinity, Tests.

39-1023
Arctic concrete technology. [Arktinen betonitekniikka],
Kivekäs, L., et al, *Finland. Technical Research Centre. Research reports*, 1984, No.305, 149p., In Finnish with English summary. 83 refs.
Huovinen, S., Hakkarainen, T., Leivo, M.
Cold weather construction, Low temperature tests, Concrete durability, Reinforced concretes, Freeze thaw cycles, Concrete structures, Frost resistance, Concrete freezing, Concrete hardening, Temperature effects.

39-1024
Geodetic deformation measurements on the Ekström, Filchner, and Ronne Ice Shelves. [Geodätische Verformungsmessungen auf dem Ekström- und Filchner-Ronne-Schelfeis],
Köhler, M., et al, *Zeitschrift für Vermessungswesen*, Apr. 1984, 109(4), p.154-161, In German with English summary. 12 refs.
Ritter, B.
Geodetic surveys, Ice shelves, Ice mechanics.
On the basis of geodetic measurements carried out in order to determine special networks on ice shelves during the austral summers 1979/80, 1980/81 and 1981/82, evaluations and accuracies are interpreted. Strain parameters of the surface near the two German Antarctic Stations on Ekström and Filchner-Ronne Ice Shelf are deduced and discussed. (Auth.)

39-1025
Doppler satellite observations of point drift rates for German research stations in the Antarctic. [Doppler-Satellitenbeobachtungen zur Positions- und Bewegungsbestimmung Deutscher Forschungsstationen in der Antarktis],
Gerdau, H., et al, *Zeitschrift für Vermessungswesen*, Apr. 1984, 109(4), p.161-175, In German with English summary. 12 refs.
Schenke, H.W.
Stations, Site surveys, Ice shelves, Drift, Spacecraft, Site selection, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf, Antarctica—Ekström Ice Shelf.
During the three German Antarctic Expeditions 1979/80, 1980/81 and 1981/82 Doppler satellite observations were carried out with two MX-1502 receivers. The aim was to find a suitable place for projected German polar research stations on the Filchner/Ronne and Ekström Ice Shelves and to determine the drift rates of selected points. The experiences of the Doppler observations on the ice and the results of field processing are discussed and compared with the findings of the postprocessing. The drift rates of the stations were computed with data from a three-week observation period in single station solutions with broadcast ephemeris forming groups of about 60 passes. The comparison with final drift rates shows only small differences. A significant difference of more than 30 m/year in the drift rates between the two points at the Filchner Station (distance 20 km) and a large rotation angle of 5 deg was found. The drift of the Filchner/Ronne Ice Shelf is about 2.8 m/day and the Ekström Ice Shelf drifts at a rate of 0.4 m/day. (Auth.)

39-1026
Determination of glacier ice drift parameters using satellite measurements in the Antarctic. [Bestimmung von Gletschereisbewegungen mit Doppler-Satellitenmessungen in der Antarktis],
Seeber, G., et al, *Zeitschrift für Vermessungswesen*, Apr. 1984, 109(4), p.176-186, In English with German summary. 12 refs.
Hinze, H.
Glacier ice, Glacier flow, Spacecraft, Doppler systems, Antarctica—Anvers Island.
During the southern summer periods 1982 and 1983 drift parameters of an antarctic glacier on Anvers Island were determined by use of satellite Doppler translocation techniques. Horizontal motion of 10 to 20 cm per day was derived from simultaneous translocation observations of 8 days with one fixed station on rock. Results from seasonal solutions correspond very well with values derived from two different years. The determination of height variations is supported by gravimetric observations. It is shown that a translocation solution is possible over a distance of 1400 km and that it improves the determination of shelf ice motion by the factor of two. (Auth.)

39-1027
Experimental gravity measurements on shelf ice. [Gravimetrische Versuchsmessungen auf Schelfeis],
Lindner, K., *Zeitschrift für Vermessungswesen*, Apr. 1984, 109(4), p.186-187, In German with English summary.
Gravity, Measurement, Ice shelves.
Possibilities of gravity measurements on antarctic shelf ice are explored. By application of a calculating digital multimeter which contains an averaging program an accuracy better than .0000001/sq m during a measuring time of 5 minutes was reached. This result is valid only under the assumption of a free swinging beam. (Auth.)

39-1028
Contribution of small glaciers to global sea level.
Meier, M.F., *Science*, Dec. 24, 1984, 226(4681), p.1418-1421, Numerous refs.
Glacier oscillation, Glacier mass balance, Ice volume, Sea level.

39-1029
Principles of designing buildings and structures for the Yamburgskoe gas field. [Printsipial'nye resheniia zdanii i sooruzhenii IAmburgskogo mestorozhdeniia],
Golovkin, V.N., *Stroitel'stvo truboprovodov*, Oct. 1984, No.10, p.9-10, In Russian.
Foundations, Gas pipelines, Residential buildings, Industrial buildings, Water supply, Permafrost beneath structures, Models, Continuous permafrost.

39-1030
Modern equipment and technology at the construction sites of gas-pumping objects in western Siberia. [Progressivnaia tekhnika i tekhnologiia na stroitel'stve neftegazoperekachivaiushchikh ob"ektov Zapadnoi Sibiri],
Zinov'ev, L.A., et al, *Stroitel'stvo truboprovodov*, Oct. 1984, No.10, p.10-12, In Russian.
Prikhod'ko, V.N., Mukhametzianov, A.Kh., Prikhod'ko, V.V.
Gas pipelines, Pumps, Earthwork, Buildings, Foundations, Permafrost beneath structures, Piles, Cost analysis.

39-1031
Using scientific potential in the construction of main pipelines in western Siberia. [Ispol'zovanie nauchnogo potentsiala pri stroitel'stve magistral'nykh truboprovodov v Zapadnoi Sibiri],
IAgovkin, V.N., *Stroitel'stvo truboprovodov*, Oct. 1984, No.10, p.12-13, In Russian.
Pipelines, Earthwork, Embankments, River crossings, Ice crossings, Piles, Foundations, Petroleum industry, Continuous permafrost, Construction equipment, Active layer, Paludification.

39-1032
Technical and economic analysis of means for fastening pipeline ballast. [Tekhniko-ekonomicheskii analiz sredstv zakrepleniia i ballastirovki truboprovodov],
Shukaev, V.A., et al, *Stroitel'stvo truboprovodov*, Oct. 1984, No.10, p.17-19, In Russian.
Vasil'ev, N.P., Poliakov, V.E., Poprykina, N.V., Fal'kovskaia, E.L.
Anchors, Pipelines, Ballast, Subarctic landscapes, Construction equipment, Continuous permafrost, Construction materials, Paludification.

39-1033
Single-pile foundations for industrial objects. [Odnosvainye fundamenty dlia promyslovykh ob"ektov],
Nakonechnyi, N.I., et al, *Stroitel'stvo truboprovodov*, Oct. 1984, No.10, p.23-25, In Russian.
Barskii, B.L.
Foundations, Supports, Concrete piles, Pile driving, Reinforced concretes, Design.

39-1034
Thermal drilling of boreholes for pile supports in frozen ground. [Ognestruinoe burenie skvazhin pri sooruzhenii svainykh opor v merzlykh gruntakh],
Sherstiuk, B.F., et al, *Stroitel'stvo truboprovodov*, Oct. 1984, No.10, p.31-34, In Russian.
Piles, Thermal drills, Supports, Boreholes, Construction equipment, Foundations, Permafrost beneath structures.

39-1035
Modern methods of frozen ground excavation. [Progressivnye metody razrabotki merzlykh gruntov],
Stroitel'stvo truboprovodov, Oct. 1984, No.10, p.43, In Russian.
Excavation, Earth fills, Foundations, Swamps, Construction equipment, Permafrost beneath structures, Earthwork, USSR—Tyumen'.

39-1036
Effective materials for thermal insulation of objects in oil and gas industry. [Effektivnye teploizoliatsionnye materialy dlia stroitel'stva ob"ektov neftianoi i gazovoi promyshlennosti],
Shaposhnikov, V.IA., et al, *Stroitel'stvo truboprovodov*, Oct. 1984, No.10, p.45-47, In Russian. 5 refs.
Stefurak, B.I.
Walls, Thermal insulation, Pipeline insulation, Construction materials, Permafrost beneath structures, Swamps, Cost analysis, Resins, Petroleum industry, Buildings, Cellular concretes, Cellular plastics, Polymers, USSR—Tyumen'.

39-1037
Improvement and maintenance of gravel roads, FUG. Final report of a joint investigation of the Nordic countries. [Sorateiden parataminen ja kunnossapito, FUG. Yhteispohjoismaisen tutkimuksen loppuraporttij],
Jóhannesson, A., et al, *Finland. Technical Research Centre. Research reports*, 1984, No.243, 96p., In Finnish with English summary.
Johannson, A., Kankare, E., Skarra, N.
Road maintenance, Gravel, Bearing strength, Surface roughness, Pavements.

39-1038
Tertiary creep model for frozen sands (discussion).
Fish, A.M., et al, *Journal of geotechnical engineering*, Sep. 1984, 110(9), MP 1810, p.1373-1378, 7 refs. For paper being discussed see 37-3969.
Assur, A.
Frozen ground mechanics, Soil creep, Sands, Strains, Mathematical models.

39-1039
Satellite discrimination of snow/cloud surfaces.
Crane, R.G., et al, *International journal of remote sensing*, Jan.-Feb. 1984, 5(1), p.213-223, 17 refs.
Anderson, M.R.
Snow surface, Cloud cover, Remote sensing, Reflectivity.

39-1040
Snow mapping with active microwave sensors.
Mätzler, C., et al, *International journal of remote sensing*, Mar.-Apr. 1984, 5(2), p.409-422, 26 refs.
Schanda, E.
Snow surveys, Remote sensing, Microwaves, Backscattering, Mapping, Wet snow, Topographic effects, Cloud cover.

39-1041
SEASAT SAR sea-ice imagery: summer melt to autumn freeze-up.
Ketchum, R.D., Jr., *International journal of remote sensing*, May-June 1984, 5(3), p.533-544, 4 refs.
Sea ice distribution, Remote sensing, Ice conditions, Ice melting, Freezeup, Backscattering.

39-1042
Ice segregation and frost heaving.
National Research Council. Ad Hoc Study Group on *Ice Segregation and Frost Heaving*, MP 1809, Washington, D.C., National Academy Press, 1984, 72p., Refs. p.37-72.
Frost heave, Ground ice, Ice lenses, Ice formation, Cold weather construction, Seasonal freeze thaw, Unfrozen water content, Phase transformations, Heat transfer, Models.

39-1043
Creep deformation of slope sediments in the Canadian Beaufort Sea.
Hill, P.R., et al, *Geo-marine letters*, Sep.-Dec. 1982, 2(3/4), p.163-170, 17 refs.
Moran, K.M., Blasco, S.M.
Soil creep, Slope stability, Ocean bottom, Sediments, Rheology, Seismic surveys, Mapping, Beaufort Sea.

39-1044
Geological interpretation of cone penetrometer tests in Norton Sound, Alaska.
Hampton, M.A., et al, *Geo-marine letters*, Sep.-Dec. 1982, 2(3/4), p.223-230, 24 refs.
Lee, H.J., Beard, R.M.
Penetrometers, Periglacial processes, Geologic processes, Ice loads, Ocean bottom, Ocean waves, Tests, United States—Alaska—Norton Sound.

39-1045
***Offshore permafrost* analysis.**
Acres Consulting Services, Ltd., Calgary, Alberta, Petro-Canada, June 1980, 20p. + appends., 3 refs.
Subsea permafrost, Permafrost thermal properties, Heat transfer, Thaw depth, Temperature distribution, Mathematical models, Water temperature, Air temperature, Terminology.

39-1046
Salt action on concrete.
Sayward, J.M., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1984, SR 84-25, 69p., ADA-147 812, Refs. p.52-57.
Concrete pavements, Salting, Corrosion, Freeze thaw cycles, Damage, Reinforced concretes, Weathering, Bridges, Chemical ice prevention, Cracking (fracturing).
Serious deterioration of concrete bridges by deicing salts is generally ascribed to depassivation and corrosion of reinforcing steel, as growth of its corrosion products causes spalling. Here, simple evaporative tests simulated the salt weathering that slowly crumbles rocks in nature, where crystals growing from pore water fed from below stress the matrix just as do ice crys-

tals in frost heaving soil. Like needle ice (surface frost action in soil) the salt columns exuded from concrete also lifted tiny particles, signifying crumbling. Microcracks developed in 1-3 years of after-test dry storage.

39-1047
Handbook for sea ice analysis and forecasting.
Stringer, W.J., et al, *U.S. Navy. Naval environmental Prediction Research Facility. Contractor report,* June 1984, NAVENPREDRSCHFAC-CR-84-03, 324p. ADA-145 286.
Barnett, D.G., Godin, R.H.
Manuals, Sea ice, Ice forecasting, Models.
Background information and techniques used to analyze and forecast sea ice conditions are presented. Emphasis has been placed on operationally-oriented analysis and forecast rules and aids and the use of climatological charts containing parameters related directly to operational decision-making based on sea ice conditions. Subject material includes sea ice morphology, characteristics and dynamics, global and regional sea ice distribution and behavior, sea ice modeling, remote sensing principles and techniques, remote sensing systems used for sea ice analysis, auxilliary sea ice observations, meteorological and climatological relationships with sea ice, operational sea ice analysis, and sea ice forecasting techniques. Numerous references are made to antarctic conditions, and charts, graphs, and photographs depict various states of the ice in antarctic waters. (*Auth. mod.*)

39-1048
Ionospheric observations of a GDR group during the 21st Soviet Antarctic Expedition 1975-1977. [Ionosphärische Beobachtungen der DDR-Gruppe während der 21. Sowjetischen Antarktisexpedition 1975 bis 1977],
Gernandt, H., *Geodätische und geophysikalische Veröffentlichungen, Reihe II,* 1979, No.22, p.1-56, In German. 30 refs.
Ice conditions, Sea ice distribution, Antarctica—Novolazarevskaya Station, Antarctica—Molodezhnaya Station.
An ionospheric research program is described along with the handling of the data and the usefulness of the observational *program and its goals. Absorption measuring methods* are compared and ionospheric conditions over Novolazarevskaya and the effects of reflectivity are discussed. Analyses are made of annual and daily absorption patterns and circulation systems; aurora influence and particle precipitation were measured and are discussed. The wintering party at Novolazarevskaya utilized ozonosonde and satellite data, described the varying states of the ice sheet, and took underwater photographs of vegetation in lakes of the Schirmacher region. Results of these observations are summarized.

39-1049
Semisubmersible response to transient ice forces.
Arockiasamy, M., et al, *Ocean engineering,* 1984, 11(5), p.463-490, Refs. p.487-490.
El-Tahan, H., Swamidas, A.S.J., Russell, W.E., Reddy, D.V.
Ice loads, Icebergs, Offshore structures, Floating ice, Strains, Impact strength, Ice pressure, Pressure ridges, Underwater ice, Ice floes.

39-1050
Safety assessment of steels and welds under cyclic and monotonic loadings at low temperatures.
Urabe, N., et al, *Journal of energy resources technology,* Dec. 1984, 106(4), p.473-479, 24 refs.
Yoshitake, A., Kagawa, H.
Cold weather tests, Steels, Welding, Loads (forces), Brittleness, Fracturing, Fatigue (materials), Low temperature tests.

39-1051
Study of frost-heave mechanics of high-clay content soils.
Yong, R.N., et al, *Journal of energy resources technology,* Dec. 1984, 106(4), p.502-508, 11 refs.
Boonsinsuk, P., Tucker, A.E.
Frost heave, Clay soils, Freeze thaw cycles, Frozen ground mechanics, Frost penetration.

39-1052
Ice force prediction based on strain-rate field.
Bruen, F.J., et al, *Journal of energy resources technology,* Dec. 1984, 106(4), p.509-514, 19 refs.
Vivatrat, V.
Ice loads, Offshore structures, Ice mechanics, Sea ice, Stress strain diagrams, Ice pressure, Ice creep, Offshore landforms, Forecasting, Compressive properties.

39-1053
Simple model of ice segregation using an analytic function to model heat and soil-water flow.
Hromadka, T.V., II, et al, *Journal of energy resources technology,* Dec. 1984, 106(4), p.515-520, 10 refs.
Guymon, G.L.
Ground ice, Frost heave, Soil water migration, Heat transfer, Phase transformations, Mathematical models, Freeze thaw tests, Temperature effects.

39-1054
Surface-water quantity in the lower Kenai Peninsula, Alaska.
Savard, C.S., et al, *U.S. Geological Survey. Water-Resources Investigations. Report,* 1984, No.84-4161, 62p., 16 refs.
Scully, D.R.
Runoff, Surface waters, Stream flow, Precipitation gages, Water chemistry, Water temperature, Surface drainage.

39-1055
Late Quaternary environments of the Soviet Union.
Velichko, A.A., ed, Minneapolis, University of Minnesota Press, 1984, 327p., Refs. passim. For selected papers see 39-1056 through 39-1062.
Permafrost distribution, Periglacial processes, Pleistocene, Landscape types, Paleoclimatology, Climatic changes, Paleobotany, Mountains, Loess, USSR.

39-1056
Dynamics of Late Quaternary permafrost in Siberia.
Baulin, V.V., et al, Late Quaternary environments of the Soviet Union. Edited by A.A. Velichko, Minneapolis, University of Minnesota Press, 1984, p.69-77, 31 refs.
Danilova, N.S.
Permafrost distribution, Paleoclimatology, Geocryology, Pleistocene, Climatic changes, Permafrost dating, Glaciation, Freeze thaw cycles, Age determination, USSR—Siberia.

39-1057
Late Pleistocene permafrost in European USSR.
Velichko, A.A., et al, Late Quaternary environments of the Soviet Union. Edited by A.A. Velichko, Minneapolis, University of Minnesota Press, 1984, p.79-86, 37 refs.
Nechaev, V.P.
Permafrost distribution, Pleistocene, Paleoclimatology, Geocryology, Soil water, Seasonal freeze thaw.

39-1058
Holocene permafrost in the USSR.
Baulin, V.V., et al, Late Quaternary environments of the Soviet Union. Edited by A.A. Velichko, Minneapolis, University of Minnesota Press, 1984, p.87-91, 13 refs.
Belopukhova, E.B., Danilova, N.S.
Permafrost distribution, Paleoclimatology, Climatic changes, Ice wedges, Ice formation, Ground ice.

39-1059
Periglacial landscapes of the East European plain.
Velichko, A.A., et al, Late Quaternary environments of the Soviet Union. Edited by A.A. Velichko, Minneapolis, University of Minnesota Press, 1984, p.95-118, 33 refs.
Bogutskiĭ, A.B., Morozova, T.D., Udartsev, V.P., Khalcheva, T.A., Tsatskin, A.I.
Periglacial processes, Landscape types, Paleoclimatology, Pleistocene, Soil chemistry, Loess, Fossils, Origin, Paleoecology.

39-1060
Cryogenic processes in loess formation in Central Asia.
Minervin, A.V., Late Quaternary environments of the Soviet Union. Edited by A.A. Velichko, Minneapolis, University of Minnesota Press, 1984, p.133-140, 24 refs.
Loess, Periglacial processes, Cryogenic soils, Origin, Climatic changes, Minerals, Paleoclimatology.

39-1061
Periglacial landscapes and loess accumulation in the Late Pleistocene Arctic and Subarctic.
Tomirdiaro, S.V., Late Quaternary environments of the Soviet Union. Edited by A.A. Velichko, Minneapolis, University of Minnesota Press, 1984, p.141-145, 18 refs.
Periglacial processes, Loess, Pleistocene, Landscape development, Paleoclimatology, Geocryology.

39-1062
Age and history of accumulation of the "ice complex" of the maritime lowlands of Yakutiya.
Kaplina, T.N., et al, Late Quaternary environments of the Soviet Union. Edited by A.A. Velichko, Minneapolis, University of Minnesota Press, 1984, p.147-151, 13 refs.
Lozhkin, A.V.
Pleistocene, Ice wedges, Radioactive age determination, Geocryology, Landforms, Distribution, USSR—Yakutia.

39-1063
Brillouin scattering from H2O: liquid, ice VI, and ice VII.
Polian, A., et al, *Physical review B: Condensed matter,* May 15, 1983, 27(10), p.6409-6412, 16 refs.
Grimsditch, M.
High pressure ice, Light scattering, Ice crystal structure, Ice physics, Ultrasonic tests, Phase transformations, Ice optics, Spectra, Liquid phases.

39-1064
On the conduction band edge energy of ice.
Grand, D., et al, *Chemical physics letters,* May 6, 1983, 97(1), p.119-122, 21 refs.
Bernas, A.
Ice physics, Molecular energy levels, Ice crystal structure, Conduction, Ions, Liquid phases, Electrons.

39-1065
Methods for the simultaneous determination of air resistance to a skier and the coefficient of friction of his skis on the snow.
Leino, M.A.H., et al, *Wear,* Apr. 1, 1983, 86(1), p.101-104, 2 refs.
Spring, E., Suominen, H.
Wood snow friction, Skis, Analysis (mathematics).

39-1066
Heterodyne detection through rain, snow, and turbid media: effective receiver size at optical through millimeter wavelengths.
Kazovsky, L.G., et al, *Applied optics,* Mar. 1, 1983, 22(4), p.706-710, 26 refs.
Kopeika, N.S.
Light scattering, Snow physics, Turbulence, Electrical measurement, Rain, Light transmission, Atmospheric physics, Attenuation.

39-1067
Choanoflagellates in the antarctic ocean, with special reference to *Parvicorbicula socialis* (Meunier) Deflandre.
Hara, S., et al, *Tokyo. National Institute of Polar Research. Memoirs,* August 1984, Special issue No.32, p.1-13, 27 refs.
Tanoue, E.
Algae, Pack ice.
Distribution and morphology of choanoflagellates, collared heterotrophic flagellates bearing an extracellular siliceous lorica, are reviewed. Eleven species are reported from the antarctic ocean. Three of the eleven are known to be endemic to the Antarctic, the other eight are found in various oceanic areas. Choanoflagellates are found in both ice and water, which suggests their wide and abundant distribution in the Antarctic. The ecological significance of the choanoflagellate, *Parvicorbicula socialis* (Meunier) Deflandre, most common species in the Antarctic, as the food of *Euphausia superba* Dana, is stressed. Morphological variation of the lorica structure of *P. socialis* caused by water temperature is discussed. (Auth.)

39-1068
Seasonal change of chlorophyll *a* under fast ice in Lützow-Holm Bay, Antarctica.
Fukuchi, M., et al, *Tokyo. National Institute of Polar Research. Memoirs,* August 1984, Special issue No.32, p.51-59, 12 refs.
Tanimura, A., Ohtsuka, H.
Ice cover effect, Chlorophylls, Antarctica—Lützow-Holm Bay.
Chlorophyll *a* concentration in water columns under the antarctic fast ice was measured at five stations (10-675 m depths) near Showa Station for a period of 13 months, from January 1982 to January 1983. High chlorophyll *a* concentrations were seen between December and March, while peaks were observed in late January. This phenomenon seemed to be caused by a slight increase of temperature (>-1.73 C) and a slight decrease of salinity (<34.15). Average chlorophyll *a* stock in water columns was at least one order of magnitude higher than that reported from the antarctic open water. (Auth.)

39-1069
Occurrence and age composition of *Paralabidocera antarctica* (Calanoida, Copepoda) under the fast ice near Syowa Station, Antarctica.
Tanimura, A., et al, *Tokyo. National Institute of Polar Research. Memoirs,* August 1984, Special issue No.32, p.81-86, 8 refs.
Fukuchi, M., Ohtsuka, H.
Ice cover effect, Plankton, Antarctica—Showa Station.
A year-round observation of *Paralabidocera antarctica,* an endemic copepod near Showa Station, is reported. *P. antarctica* occurred in the spring-to-summer season, between late September and late January, and was very abundant while the phytoplankton biomass was high. The *P. antarctica* population which appeared in late September to early November was composed of copepodite stages I, II and III. Developmental stage progressed from middle November to middle December. In middle December, the *P. antarctica* population consisted mostly of adults with a few individuals of copepodite stage V. After late December, it consisted of adults only. *P. antarctica* seems to have one generation a year. (Auth.)

39-1070
Fate of DDTs, PCBs and chlordane compounds in the antarctic marine ecosystem.
Hidaka, H., et al, *Tokyo. National Institute of Polar Research. Memoirs,* August 1984, Special issue No.32, p.151-161, 20 refs.
Tanabe, S., Kawano, M., Tatsukawa, R.
Ice composition, Water pollution, Ice cover effect, Antarctica—Showa Station, Antarctica—Tottsuki Point.
Bioaccumulation and environmental behavior of DDTs, PCBs and chlordane compounds in the antarctic marine ecosystem under the fast ice were studied. Many samples such as seawater, benthic invertebrates, fishes, Weddell seal etc., were collected at the Tottsuki Point and from Showa Station. In seawater samples, the concentration of PCBs was found to be higher than that of DDTs but reverse in organisms. Chlordane concentrations showed the middle level between PCBs and DDTs in both seawater and organisms. In higher trophic level organisms, the bioconcentration factors increased, and variable compositions of PCBs and chlordane compounds were also found. Concentration levels of DDTs and PCBs in the antarctic marine ecosystem were about two orders of magnitude lower than those in the western North Pacific. (Auth.)

39-1071
Vegetation of the Far East. [Rastitel'nyĭ mir Dal'nego Vostoka],
Nechaev, A.P., ed, Khabarovsk, 1976, 136p., In Russian. For selected papers see 39-1072 and 39-1073. Refs. passim.
Alpine landscapes, Mountain soils, Forest soils, Cryogenic soils, Plant ecology, Ecosystems.

39-1072
Woody plants of the Polyan-Gurskoe interfluve, the lower Amur River area. [Dendroflora Polian-Gurskogo mezhdurech'ia (Nizhnee Priamur'e)],
Karpenko, N.P., Rastitel'nyĭ mir Dal'nego Vostoka (Vegetation of the Far East) edited by A.P. Nechaev, Khabarovsk, 1976, p.23-29, In Russian. 13 refs.
Mountain soils, Forest soils, Frost penetration, Plant ecology, Ecosystems.

39-1073
Using cluster analysis in separating ecological groups of species from flood-plain meadows of Central Zeya. [Opyt vydeleniia ekologicheskikh grupp vidov pol'mennykh lugov Srednei Zei s ispol'zovaniem kliasternogo analiza],
Shelestova, T.F., et al, Rastitel'nyĭ mir Dal'nego Vostoka (Vegetation of the Far East) edited by A.P. Nechaev, Khabarovsk, 1976, p.57-68, In Russian. 22 refs.
Rozenberg, G.S.
Alpine landscapes, Frost penetration, Plant ecology, Ecosystems, Cryogenic soils, Correlation.

39-1074
Analysis of causes of failure of residential buildings constructed on water-saturated clays.
Stroganov, A.S., *Soil mechanics and foundation engineering,* Jan.-Feb. 1984 (Pub. July 84), 21(1), p.6-11, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 16 refs.
Clays, Loams, Foundations, Paludification, Settlement (structural), Moraines, Residential buildings.

39-1075
Hydrulicked soils of western Siberia as beds for structures.
Konovalov, P.A., et al, *Soil mechanics and foundation engineering,* Jan.-Feb. 1984 (Pub. July 84), 21(1), p.25-30, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 16 refs.
Nikiforova, N.S., Kushnir, S.IA.
Alluvium, Soil formation, Sands, Dredging, Hydraulic fill, Foundations, Bearing strength.

39-1076
Computation of depth of multiyear frost in beds of buildings constructed on nonconfluent-type permafrost.
Khrustalev, L.N., et al, *Soil mechanics and foundation engineering,* Jan.-Feb. 1984 (Pub. July 84), 21(1), p.30-33, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 5 refs.
Nikiforov, V.V.
Foundations, Permafrost thickness, Permafrost beneath structures, Frost penetration, Discontinuous permafrost, Buildings, Active layer, Permafrost depth, Design.

39-1077
Feasibility study of permafrost thawing regime by electric heaters.
Maksimenko, E.S., *Soil mechanics and foundation engineering,* Jan.-Feb. 1984 (Pub. July 84), 21(1), p.34-36, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 6 refs.
Permafrost beneath structures, Permafrost thermal properties, Ground thawing, Artificial thawing, Foundations, Buildings.

39-1078
Determination of foundation settlements with allowance for variation in compression modulus of clayey soils as function of stressed state.
Dalmatov, B.I., et al, *Soil mechanics and foundation engineering,* Jan.-Feb. 1984 (Pub. July 84), 21(1), p.37-42, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 8 refs.
Chikishev, V.M.
Foundations, Clay soils, Settlement (structural), Soil compaction, Compressive properties.

39-1079
Characteristics of ortsteins of superficially gleyey tundra soils.
Tsypanova, A.N., *Soviet soil science,* Jan.-Feb. 1984, No.1, p.5-11, Translated from Pochvovedenie. 13 refs.
Cryogenic soils, Soil profiles, Soil composition, Plant ecology, Subarctic landscapes, Tundra, Ecosystems, Taiga.

39-1080
Characteristics of soil formation on loesslike loams in the southern taiga of Central Siberia.
Gorbachev, V.N., et al, *Soviet soil science,* Jan.-Feb. 1984, No.1, p.12-18, Translated from Pochvovedenie. 10 refs.
Popova, E.P., Sukachev, V.N.
Cryogenic soils, Loess, Loams, Soil composition, Soil profiles, Soil formation, Taiga.

39-1081
Prediction of main engine failure flows on the basis of generalized functions. [Prognozirovanie potokov otkazov glavnykh sudovykh dvigateleĭ na osnove obobshchennykh funktsiĭ],
Lakhanin, V.V., et al, *Sudostroenie,* Nov. 1984, No.11, p.18-21, In Russian. 2 refs.
Birilko, IU.N.
Ships, Ice navigation, Diesel engines, Icebreakers, Transportation.

39-1082
Standardization of the application of shipbuilding fine-aggregate concretes. [Standartizatsiia primeneniia sudostroitel'nykh peschanykh betonov],
Mishutin, V.A., *Sudostroenie,* Nov. 1984, No.11, p.36-38, In Russian. 7 refs.
Docks, Winter concreting, Floating structures, Ships, Concrete structures, Concrete admixtures, Concrete aggregates, Sands, Reinforced concretes, Concrete placing.

39-1083
Stages in the development of Soviet icebreaking cargo ships. [Etapy razvitiia otechestvennykh ledokol'no-transportnykh sudov],
Andrienko, V.G., et al, *Sudostroenie,* Nov. 1984, No.11, p.52-55, In Russian. 13 refs.
Stefanovich, A.N.
Ice navigation, Ships, Icebreakers, Design.

39-1084
Approximate solution of the Stefan problem on a segment.
Gliko, A.O., et al, *Journal of engineering physics,* Dec. 1983 (Pub. June 1984), 45(6), p.1450-1455, Translated from Inzhenerno-fizicheskiĭ zhurnal. 5 refs.
Efimov, A.B., Labutin, S.A.
Stefan problem, Boundary value problems, Heat transfer, Heat flux, Temperature variations.

39-1085
Proceedings of the Fourth Symposium on Antarctic Geosciences, 1983.
Nagata, T., ed, *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, 240p.
Geomorphology, Glacier thickness, Bottom topography, Icebreakers, Glacial geology.
The Symposium was held on October 28 and 29, 1983 at NIPR, Tokyo. The volume contains 20 full scientific papers and 7 abstracts, dealing with geology, petrology, geomorphology, geophysics and geochemistry of Antarctic regions. For individual papers see 39-1086 through 39-1094 or E-30912, E-30915 through E-30922, E-30924 through E-30929, F-30910, J-30923, L-30909, L-30911, L-30913 and L-30914.

39-1086
Estimation of the ice thickness of cirque glaciers by the gravimetric survey at the Yamato Mountains, East Antarctica.
Nagao, T., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, p.9-16, 14 refs.
Yoshida, Y.
Cirque glaciers, Glacier thickness, Gravimetric prospecting, Rocks, Antarctica—Queen Fabiola Mountains.
As part of geophysical investigations by JARE-22 gravity measurements were carried out along the inland traverse route and in the Yamato Mountains region in 1981. In the latter area, the depth of subglacial rock surfaces under two peculiar cirque glaciers and one outlet glacier was estimated by gravity measurements, in addition to the investigation of the gravity field in ice-free areas. Four results of special significance are emphasized: a steep decrease in bedrock height, the deepest bedrock reaches 265 m; relationships among cirque bottom depth and ice sheet depth; and the fault line location and orientation. These features are listed, located, discussed and interpreted. (Auth. mod.)

39-1087
Velocities of *P* and *S* waves for drilling core rocks at Syowa Station, Antarctica.
Yukutake, H., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, p.17-27, 18 refs.
Ito, K.
Wave propagation, Drill core analysis, Rock mechanics, Velocity, Tectonics, Antarctica—Showa Station.
Velocities of compressional and shear waves for drill core samples at Showa Station are measured at confining pressure up to 0.5 GPa (5 kbar). The samples consist predominantly of granitic complex or gneiss older than 350-533 m.y. in the shield region. Measurements of *P* wave velocities for three orthogonal directions and *S* wave velocities for two orthogonal directions reveal anisotropy of the rocks. Velocities increase rapidly with increasing pressure at low pressures below 50-120 MPa due to crack closure. Velocities increase linearly with increasing pressure at higher pressures than 50-120 MPa, but velocities for each direction are nearly the same. A velocity model in the upper 20 km of the crust is estimated from laboratory data, assuming an appropriate temperature profile. The proposed model of *P* wave velocity increasing gradually with depth is consistent with the upper crustal structure obtained by the explosion seismic experiments in the Ongul Islands and the Mizuho Plateau. (Auth.)

39-1088
Sea gravimeter of the icebreaker *Shirase*.
Segawa, J., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, p.48-60, 5 refs.
Kaminuma, K., Ueda, Y.
Icebreakers, Gravity, Data processing.
The gravimeter system of the *Shirase* is the NIPRORI-1 sea gravimeter which was transferred from the icebreaker *Fuji*. During installation on the *Shirase* some changes for adaptation as well as some improvements for enhancing the capabilities were made. The main differences are as follows: The gravity sensor unit and the data processing unit were installed in separate rooms. An air-cushioned board was placed in the gravity sensor room in order to reduce vibration of the floor caused by the engines. The data processing unit was expanded, and computers and floppy disks were doubled. Temperature regulation of the gravimeter was improved, so that it became possible to detect the tidal variation of gravity by the use of the existing gravity sensor. The operation by interrogation software element was improved and the noise filtering was refined. (Auth.)

39-1089
Preliminary surveys of the antarctic continental shelf by a seismic profiler in Amundsen Bay and Lützow-Holm Bay.
Moriwaki, K., *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, p.61-65, 4 refs.
Bottom topography, Geomorphology, Seismic surveys, Antarctica—Amundsen Bay, Antarctica—Lützow-Holm Bay.
Preliminary sonic prospecting by a sparker system was carried out on the Antarctic continental shelf on board the icebreaker *Fuji*. A ridge which seems to be a drowned lateral moraine was found in Amundsen Bay. The broad rise north-northwest of the Ongul Islands is identified as an erosional surface, at least its northern part. (Auth.)

39-1090
Preliminary results of geological and geophysical surveys in the Ross Sea and in the Dumont D'Urville Sea, off Antarctica.
Sato, S., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, p.66-92, 16 refs.
Asakura, N., Saki, T., Oikawa, N., Kaneda, Y.
Bottom topography, Sediments, Geomorphology, Seismic surveys.
Geological and geophysical surveys in the Ross Sea and Dumont d'Urville Sea, in the 1982-1983 Antarctic summer season, confirmed the presence of two large basins. The six-fold seismic reflection profiles indicate seven depositional sequences,

which consist mainly of deltaic sediments with admixed glacial sediments in the Eastern Basin. Similar sediments were deposited in a graben structure in the Central Basin. The seismic reflection and refraction data suggest the presence of sediments of pre-Late Oligocene age in the deeper parts of the two basins beneath the Ross Sea. Four strata in the basin of the Dumont d'Urville Sea are interpreted from reflection data. They were formed by seafloor spreading associated with rifting between Wilkes Land and South Australia. Seismic refraction indicates a maximum sedimentary thickness in excess of 5 km. The age of the acoustic basement may be older than Late Oligocene. (Auth. mod.)

39-1091
Identification of bedrock types beneath the ice sheet by radio echo sounding in the bare ice field near the Yamato Mountains, Antarctica.
Ohmae, H., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, p.95-102, 5 refs.
Nishio, F., Ishikawa, M., Takahashi, S.
Subglacial observations, Radio echo soundings, Ice acoustics, Rocks.
From Dec. 1982 to Jan. 1983 an oversnow traverse party of the 23rd JARE took photographs of A-scope recorder every 1 km along the traverse routes. The reflection intensity of the radio echo signals from the ice/bedrock interface was calculated by correcting the effect of the attenuation loss of electromagnetic waves within the ice sheet. Dielectric constants of the rocks were measured in a frequency range from 3 to 50 MHz and gave values which varied from 2 to 5. To identify bedrock types beneath the ice sheet in the bare ice area, the reflection intensity of the bedrock is compared with the echo strength calculated from the measured dielectric constant of rock samples. It is found that the bedrock is granitic gneiss in the region near Massif A of the Yamato Mountains, and there are a few areas along the traverse route where the bedrock gives a strong echo between -10 and -20 dB. (Auth.)

39-1092
Idea on extraction of uranium from seawater using the drift of icebergs.
Nishiyama, T., *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, p.184-186, 7 refs.
Icebergs, Drift, Radioactive isotopes, Water chemistry, Mineralogy.
On recovering uranium from seawater, one of the most radical problems awaiting solution is how to contact economically an enormous quantity of seawater with absorbents. In this paper a new method of mechanical cable-bucket system combined with the drift of icebergs is discussed. In order to determine the amount of recoverable uranium, an iceberg of 1 km in length and drifting at 1 kt was chosen. A 5-km loop with absorbent buckets attached at 3 m intervals was hung over the iceberg. Assuming that absorption efficiency is 30% and desorption efficiency 90%, the amount of uranium produced by this recovery process is estimated to be 77 t a year. (Auth.)

39-1093
Monitoring of pond waters near Syowa Station (II).
Murayama, H., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, p.187-193, For Part I of this study see 12E-25878. 2 refs.
Watanuki, K., Nakaya, S., Torii, T.
Lake water, Snowmelt, Chemical composition.
Water samples collected in 1981 and 1982 were analyzed from the geochemical and environmental viewpoints. The water samples were collected from five lakes which have been selected as monitoring stations since 1978. Comparing the data obtained in this work with available previous data, the authors point out the results as follows. Five lakes selected in 1978 were found suitable as monitoring stations. Chemical compositions and dissolved salts in Lake Nurume and Lake Hunazoko have not changed markedly in the last fifteen years. The amount of dissolved salts in three lakes has changed considerably. (Auth.)

39-1094
Origin of salt in antarctic saline lake waters through trace element analysis.
Masuda, N., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Sep. 1984, Special issue No.33, p.194-203, 21 refs.
Nakaya, S., Torii, T.
Lake water, Chemical composition, Glacier ice, Antarctica—Wright Valley, Antarctica—Taylor Valley.
The origin of trace elements in Antarctic saline lake waters is still not clear. Waters of five Antarctic saline lakes and ponds in the Wright Valley and the Taylor Valley, and one coastal glacier ice were analyzed by the neutron activation method. Three possible origins, connate sea water, rock weathering and tropospheric aerosol particles, were investigated. The correlations of chemical constituents between the South Pole aerosol particles and the lake and pond waters indicate that trace elements in the antarctic saline lake and pond waters might have been derived mostly from aerosol particles. (Auth.)

39-1095
Ship strength and winter navigation.
VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, 259p., Refs. passim. For selected papers see 39-1096 through 39-1105.
Ice navigation, Ice loads, Ships, Flexural strength, Ocean waves, Icebreakers, Bearing strength, Hydrodynamics.

39-1096
Rational approach to ship strength problems.
Varsta, P., *VTT Symposium 52: Ship Strength* and Winter Navigation, Espoo, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.9-30, 13 refs.
Ships, Ice navigation, Ocean waves, Loads (forces), Bearing strength, Design, Hydrodynamics.

39-1097
Ship strength analysis and strength criteria.
Kujala, P., et al, VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.123-147, 8 refs.
Rintala, S.
Icebreakers, Loads (forces), Ships, Ocean waves, Bearing strength, Design criteria, Models, Ice navigation, Flexural strength, Shear stress.

39-1098
Special features of multihull vessels, design concepts of a Catamaran.
Terje, P., VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.149-156.
Ships, Bearing strength, Ocean waves, Ice loads, Design, Loads (forces).

39-1099
Special features of multihull vessels.
Valanto, P., VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.157-176, 5 refs.
Ice loads, Ships, Ocean waves, Loads (forces), Hydrodynamics, Stresses, Bearing strength, Impact strength, Computer applications, Flexural strength.

39-1100
Determination of ice loads semiempirically.
Varsta, P., VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.177-182, 2 refs.
Ice loads, Ice navigation, Ships, Icebreakers, Ice pressure, Analysis (mathematics).

39-1101
Level ice resistance—ideas stemming from the model and the full scale tests.
Nyman, T., et al, VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.183-200.
Riska, K.
Ice navigation, Ships, Ice strength, Ice loads, Flexural strength, Ice elasticity, Bearing strength, Ice models, Tests, Metal ice friction, Ice cover thickness.

39-1102
Ice loads of propulsion machinery.
Jussila, M., VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.201-212.
Ice loads, Propellers, Ice navigation, Ice breaking, Ships, Ice conditions, Ice pressure, Shear strength.

39-1103
Measurements of ice loads.
Vuorio, J., VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.213-229, 6 refs.
Ice loads, Ships, Ice navigation, Propellers, Ice pressure, Strain tests, Ice cover thickness, Ice strength.

39-1104
Up-dating of the Finnish-Swedish ice class rules.
Edelmann, G., VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.231-245, 4 refs.
Ice navigation, Ships, Propellers, Ice pressure, Icebreakers, Bearing strength, Ice cover thickness.

39-1105
New fine-grain model-ice of Wärtsilä Arctic Research Centre.
Enkvist, E., VTT Symposium 52: Ship Strength and Winter Navigation, Espoo, Finland, Jan. 10-11, 1984, Espoo, Finland, Valtion teknillinen tutkimuskeskus, 1984, p.247-259.
Ice navigation, Ice models, Flexural strength, Strain tests, Ships, Ice breaking, Ice salinity, Ice physics, Propellers.

39-1106
Geomorphology of the Ablation Point massif, Alexander Island, Antarctica.
Clapperton, C.M., et al, *Boreas,* 1983, 12(2), p.125-135, 12 refs.
Sugden, D.E.
Geomorphology, Geological maps, Glacial geology, Antarctica—Alexander Island.
A coloured geomorphological map at the approximate scale of 1:50,000 is presented for the Ablation Point massif area. The main geomorphological features are described, such as ice and snow cover, glacial landforms and deposits (and chronology), ice marginal lakes, melt pools, gelifluction landforms and patterned ground and valley-slope landforms. The area is thought to be a good analogue for glacial age maritime northwest Europe. (Auth.)

39-1107
Cosmo-geological methods of investigating the Arctic. [Kosmogeologicheskie metody issledovaniia v Arktike],
Lopatin, B.G., ed, Leningrad, 1984, 108p., In Russian. For selected papers see 39-1108 through 39-1111. Refs. passim.
Ocean bottom, Ocean environments, Shores, Spaceborne photography, Ice shelves, Snow cover distribution, Sea ice distribution, Arctic landscapes, Tundra, Swamps, Thermokarst lakes, Solifluction, Charts, Arctic Ocean.

39-1108
Influence of Arctic natural conditions on the information content of satellite photographs. [Vliianie prirodnykh uslovīĭ Arktiki na informativnost' kosmicheskikh snimkov],
Kuteĭnikova, N.S., et al, Kosmogeologicheskie metody issledovaniia v Arktike (Cosmo-geological methods of investigating the Arctic) edited by B.G. Lopatin, Leningrad, 1984, p.5-11, In Russian.
Lopatin, B.G.
Spaceborne photography, Arctic landscapes, Photointerpretation, Shores, Snow cover distribution.

39-1109
Geomorphologic regionalization of the Yamal paleoshelf and Gydan from satellite photographs. [Geomorfologicheskoe ralonirovanie paleoshel'fa IAmala i Gydana po kosmicheskim snimkam],
Musatov, E.E., Kosmogeologicheskie metody issledovaniia v Arktike (Cosmo-geological methods of investigating the Arctic) edited by B.G. Lopatin, Leningrad, 1984, p.67-83, In Russian. 13 refs.
River basins, Spaceborne photography, Mapping, Valleys, Arctic landscapes, Plains, Swamps, Tundra, Thermokarst lakes, Solifluction, Frost mounds, Charts.

39-1110
Combined use of geological and geophysical data, bathymetry, and satellite photographs in morphologic-structural analyses of the western Arctic shelf. [Opyt kompleksnogo ispol'zovaniia geologo-geofizicheskikh dannykh, batimetrii i kosmicheskikh snimkov pri morfostrukturnom analize Zapadno-Arkticheskogo shel'fa],
Zarkhidze, V.S., et al, Kosmogeologicheskie metody issledovaniia v Arktike (Cosmo-geological methods of investigating the Arctic) edited by B.G. Lopatin, Leningrad, 1984, p.84-93, In Russian. 4 refs.
Krasnozhen, A.S.
Marine geology, Ice shelves, Sea ice distribution, Spaceborne photography, Geological surveys, Geophysical surveys, Arctic Ocean.

39-1111
Photographic anomalies on satellite photographs of the western Arctic shelf. [Fotoanomalii na kosmicheskikh snimkakh Zapadno-Arkticheskogo shel'fa],
Gurevich, V.I., et al, Kosmogeologicheskie metody issledovaniia v Arktike (Cosmo-geological methods of investigating the Arctic) edited by B.G. Lopatin, Leningrad, 1984, p.94-108, In Russian. 10 refs.
Lopatin, B.G., Musatov, E.E.
Shores, Sea ice distribution, Coastal topographic features, Ocean bottom, Ocean environments, Spaceborne photography, Photointerpretation, Charts, Accuracy, Defects, Arctic Ocean.

39-1112
Materials and design of technical equipment for the North. ⌈Materialy i konstruktsii dlia tekhniki Severa⌉,
Urzhumtsev, IU.S., ed, Yakutsk, Yakutskiĭ filial SO AN SSSR, 1984, 85p., In Russian. For selected papers see 39-1113 through 39-1117. Refs. passim.
Construction equipment, Polymers, Frost action, Water pipelines, Power lines, Insulation, Motor vehicles, Cold weather performance, Supports, Plates, Plastics snow friction.

39-1113
***Stability of thermosoftening* plastics under cold climatic conditions.** ⌈Atmosferostoĭkost' termoplastov v usloviiakh kholodnogo klimata⌉,
Starzhenetskaia, T.A., et al, Materialy i konstruktsii dlia tekhniki Severa (Materials and design of technical equipment for the North) edited by IU.S. Urzhumtsev, Yakutsk, Yakutskiĭ filial SO AN SSSR, 1984, p.49-54, In Russian. 5 refs.
Abakumova, N.M., Sentiurin, E.G., Titova, O.K.
***Frost action, Construction materials, Thermal insula*tion, Frost resistance, Plastics, Porosity, Wettability.**

39-1114
Studying the contact interaction of fluoroplastic-4 with crystallized water. ⌈Issledovanie kontaktnogo vzaimodeĭstviia opory iz ftoroplasta-4 s zakristallizovannoĭ vodoĭ⌉,
Igoshin, V.A., et al, Materialy i konstruktsii dlia tekhniki Severa (Materials and design of technical equipment for the North) edited by IU.S. Urzhumtsev, Yakutsk, Yakutskiĭ filial SO AN SSSR, 1984, p.54-58, In Russian. 5 refs.
Egorov, E.N., Berdnikov, A.G.
Construction *materials, Polymers,* Supports, Adhesion, Snow cover, Frost action, Models, Cold weather tests, Test equipment.

39-1115
Reliability of automobile performance in the cold climate of western Yakutia. ⌈Ekspluatatsionnaia nadezhnost' avtomobileĭ v zone kholodnogo klimata (Zapadnaia IAkutiia)⌉,
Ishkov, A.M., et al, Materialy i konstruktsii dlia tekhniki Severa (Materials and design of technical equipment for the North) edited by IU.S. Urzhumtsev, Yakutsk, Yakutskiĭ filial SO AN SSSR, 1984, p.59-64, In Russian. 3 refs.
Grigor'ev, R.S.
Engines, Motor vehicles, Cold weather performance, Frost action, Transportation.

39-1116
High-voltage plastic insulators for power lines of the North. ⌈Vysokovol'tnye izoliatory iz polimernykh materialov dlia LEP v usloviiakh Severa⌉,
Dordin, IU.R., et al, Materialy i konstruktsii dlia tekhniki Severa (Materials and design of technical equipment for the North) edited by IU.S. Urzhumtsev, Yakutsk, Yakutskiĭ filial SO AN SSSR, 1984, p.64-71, In Russina. 7 refs.
Platonov, N.N., *Zherebtsov*, V.A., Shumilov, IU.N.
Insulation, Power lines, Polymers, Frost action, Electric power.

39-1117
Assembly for testing plastic pipes by internal hydrostatic pressure. ⌈Ustanovka dlia ispytaniia plastmassovykh trub vnutrennim *gidrostaticheskim* davleniem⌉,
Gol'dshtrakh, I.Z., et al, Materialy i konstruktsii dlia tekhniki Severa (Materials and design of technical equipment for the North) edited by IU.S. Urzhumtsev, Yakutsk, Yakutskiĭ filial SO AN SSSR, 1984, p.71-74, In Russian.
Riabets, IU.S., Sipiagina, G.A.
Water pipelines, Plastics, Pipes (tubes), Pipeline freezing, Cold weather tests.

39-1118
Problems of hydrodynamics with free boundaries. ⌈Zadachi gidrodinamiki so svobodnymi granitsami⌉,
Monakhov, V.N., ed, *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Dinamika sploshnoĭ sredy*, 1984, Vol.64, 169p., In Russian. For selected papers see 39-1119 and 39-1120. Refs. passim.
Stefan problem, Phase transformations, Liquid solid interfaces, Thermal *diffusion*, Heat balance, Thermal conductivity.

39-1119
Structure of generalized solution of a univariate Ste*fan problem*. ⌈O strukture obobshchennogo resheniia odnomernoĭ zadachi Stefana⌉,
Kaliev, I.A., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Dinamika sploshnoĭ sredy*, 1984, Vol.64, Zadachi gidrodinamiki so svobodnymi granitsami (Problems of hydrodynamics with free boundaries) edited by V.N. Monakhov, Novosibirsk, 1984, p.24-47, In Russian. 1[illegible] refs.
Meirmanov, A.M.
Stefan problem, Phase transf*ormations.* Liquid solid interfaces, Heat balance, Thermal conductivity.

39-1120
Time periodic solution of a thermal diffusion Stefan Problem. ⌈Periodicheskoe po vremeni reshenie termodiffuzionnoĭ zadachi Stefana⌉,
Petrova, A.G., *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Dinamika sploshnoĭ sredy*, 1984, Vol.64, Zadachi gidrodinamiki so svobodnymi granitsami (Problems of hydrodynamics with free boundaries) edited by V.N. Monakhov, Novosibirsk, 1984, p.82-98, *In Russian.* 3 *refs.*
Stefan problem, Phase transformations, Thermal diffusion, Boundary value problems, Binary systems (materials).

39-1121
Frozen ground engineering.
Phukan, A., Englewood Cliffs, NJ, Prentice-Hall, 1985, 336p., Refs. p.310-332.
DLC TA153.P48 1985
Frozen ground physics, Permafrost physics, Permafrost beneath structures, Permafrost beneath roads, *Cold weather construction, Foundations,* Piles, Ground ice, Soil classification, Utilities, Drilling, Slope stability, Frozen ground mechanics, Permafrost thermal properties, *Permafrost distribution.*

39-1122
***Treatment of fuel* peat by the addition of lime with a freeze-thaw cycle.**
Sharp, J.J. *Fuel,* June 1983, 62(6), p.749-750, 1 ref.
Fuels, Peat, *Freeze thaw* cycles, Liming, Drying Water content, Tests.

39-1123
MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 4: Initial results and analysis from MIZEX 83. *U.S. Army Cold Regions Research and Engineering Laboratory.* Sep 1984, SR 84-28, 56p., ADA-148 255, Refs. passim. For individual papers see 39-1124 through 39-1130.
Ice mechanics, Drift stations, Ice edge, Sea ice distri*bution, Rheology,* Ice *creep,* Oceanography, Ice water interface, Ice air interface, Ice conditions.

39-1124
Drift velocity during the drift-station phase of MIZEX 83.
McPhee, M.G., *U.S. Army Cold Regions Research and Engineering Laboratory.* *Special report.* Sep 1984, SR 84-28, p.1-11, ADA-148 255, 2 refs.
***Drift stations,* Ice mechanics, Ice edge, Velocity, Drift.**

39-1125
MIZEX 83—BIO buoy data summary.
Symonds, G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory.* *Special report.* Sep 1984, SR 84-28, p.13-18, ADA-148 255.
Peterson, I.
Drift stations, Ice edge, Ice mechanics, Velocity.

39-1126
MIZEX 83 mesoscale sea ice dynamics: initial analysis.
Hibler, W.D., III, et al, *U.S. Army Cold Regions Research and Engineering Laboratory.* *Special report.* Sep 1984, SR 84-28, MP 1811, p.19-28, ADA-148 255, 3 refs.
Leppäranta, M.
Ice mechanics, Sea ice, Strains, Ice conditions, Ice deformation, Ice floes, Ice edge.

39-1127
On the rheology of a broken ice field due to floe collision.
Shen, H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory.* *Special report.* Sep 1984, SR 84-28, MP 1812, p.29-34, ADA-148 255, 6 refs.
Hibler, W.D., III, Leppäranta, M.
Ice mechanics, Rheology, Ice floes, Interfaces, Stresses, Ice creep, Ice edge, Mathematical models, Velocity.

39-1128
Heat and mass balance observations during the MIZEX 83 drift program.
Maykut, G.A., [illegible] *Cold Regions Research and Engineering Laboratory.* [illegible] Sep 1984, SR 84-28, [illegible] ADA-148 255.
Ice melting, Heat balance, Mass balance, Drift, Ice edge, Ice water interface, Ice air interface, Meltwater, Sea water, Ablation, Snow depth, Salinity.

39-1129
Ocean currents and temperatures in the center of Fram Strait during MIZEX 83.
Hanson, K., [illegible] *Cold Regions Research and Engineering Laboratory.* *Special report.* Sep 1984, SR 84-28, [illegible] ADA-148 255, [illegible] ref.
Ocean currents, Water temperature, Ice edge, Moorings, Measuring instruments.

39-1130
Arctic whitecapping: preliminary results.
Monahan, E.C., [illegible] *Cold Regions Research and Engineering Laboratory.* *Special report.* Sep 1984, SR 84-28, [illegible] ADA-148 255, 14 refs.
Bowyer, P.A.
Ocean waves, Bubbles, Ice edge, Pack ice, Wind velocity, Air temperature, Water temperature.

39-1131
Variations in Antarctic sea ice conditions and relationships with Southern Hemisphere cyclonic activity, winters 1973-1977.
Carleton, A.M., *Archives for meteorology, geophysics, and bioclimatology,* [illegible] 1985, [illegible] p.1-22, With German summary. [illegible]
DLC QC851.A73
Ice growth, Sea ice, [illegible] Periodic variations, Ice edge, Antarctica.
[illegible]

39-1132
Soluble and insoluble impurities along the 950 m deep Vostok ice core (Antarctica)—Climatic implications.
De Angelis, M., et al, *Journal of atmospheric chemistry,* 1984, 1(3), p.215-239, Refs. p.237-239.
Aerosols, Ice cores, Ice *composition, Paleoclimatology,* Antarctica—Vostok Station.
[illegible]

39-1133
Problems of polar oceanology [illegible]
[illegible]
Treshnikov, A.F., [illegible] Studies of the ocean edited by [illegible] Kokhbarkov, Moscow, [illegible] 1984, [illegible] In Russian. 20 refs.
[illegible]
Polar regions, Climatic changes, Sea level, Oceanography, Drift stations, Water transport, Sea ice distribution, Ice conditions, Radiation balance, Ice formation, Heat transfer, Theories.
[illegible]

polar region. The POLEX-South-81 expedition, performed complex hydrometeorological studies in the Australian sector, where air-mass transfer and the development of meridional processes were often disturbed; its program also included studies of the Antarctic circumpolar current, and the formation of the Antarctic Bottom Waters. Investigations performed were more of an exploratory nature, and similar studies continued in the Weddell Sea in 1981-82.

39-1134
Calculating the emissivity of ice and snow covers in the ultra-high-frequency range. (Raschet izluchatel'noi sposobnosti ledianogo i snezhnogo pokrovov v SVCh diapazone).
Belich, R.B., *Leningrad. Gosudarstvennyi nauchno-issledovatel'skii tsentr izucheniia prirodnykh resursov. Trudy*, 1984, Vol.18, p.91-102, In Russian. 11 refs.
Remote sensing, Snow survey tools, Ice physics, Ice structure, Snow physics, Snow cover structure, Emissivity, Snow depth, Snow cover distribution, Ice edge, Ice cover strength, Snow water equivalent.

39-1135
Using the model of a horizontally-inhomogeneous boundary layer for evaluating parameters of ice deposits. (Ispol'zovanie modeli gorizontal'no-neodnorodnogo pogranichnogo sloia dlia otsenki parametrov gololednykh otlozhenii).
Ivanova, L.A., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1984, Vol.483, p.14-21, In Russian. 9 refs.
Glaze, Ice accretion, Icing, Ice formation, Mathematical models.

39-1136
General hydrology (hydrology of dry land). (Obshchaia gidrologiia (gidrologiia sushi)).
Bogoslovskii, B.B., et al, Leningrad, Gidrometeoizdat, 1984, 422p., In Russian with abridged English table of contents enclosed. 68 refs.
Samokhin, A.A., Ivanov, K.E., Sokolov, D.P.
Glacial hydrology, Hydrothermal processes, Permafrost hydrology, Snow water equivalent, Snow line, Snow hydrology, River ice, Avalanche formation, Lake ice, Ice conditions, Hydrologic cycle, Thermal regime, Avalanche triggering, Water balance, Paludification, Landscape types, Human factors.

39-1137
Chemical analyses of soils and other surficial materials, Alaska.
Gough, L.P., et al, *U.S. Geological Survey. Open-file report*, 1984, No.84-423, 77p., 11 refs.
Geochemistry, Soil chemistry, Chemical analysis, Tundra, Mapping, United States—Alaska.

39-1138
Secondary stress within the structural frame of DYE-3: 1978-1983.
Ueda, H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1984, SR 84-26, 44p., ADA-148 401, 5 refs.
Tobiasson, W., Fisk, D., Keller, D., Korhonen, C.
Snow loads, Stresses, Military facilities, Structures, Foundations, Loads (forces), Wind factors, Cold weather construction, Greenland.
DEW line ice cap station DYE-3 was moved sideways 210 ft and placed on a new foundation in 1977, then raised 27 ft in 1978. Secondary forces within the structural steel framework were measured in 1978, 1981, 1982 and 1983. The overall level of secondary stresses had increased but through 1983 the columns were still within their stress limitations. Some localized overstress is expected in 1984. The concept of using above-surface trusses to resist wind loads and brace the eight columns has proven to be satisfactory. It has eliminated the subsurface enclosures used in the past to protect subsurface trusses, enclosures that proved to be the structural weak link of the original facility; their elimination has resulted in a stronger facility that is easier to maintain. The measurements and findings of this program were used in the development of the design to extend the life of DYE-3 to be implemented in 1984. That work should reduce the level of secondary stresses in the frame.

39-1139
Deuterium diffusion in a soil-water-ice mixture.
Oliphant, J.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1984, SR 84-27, 11p., ADA-148 457, 7 refs.
Tice, A.R.
Frozen ground physics, Isotopes, Soil water migration, Phase transformations, Tests, Laboratory techniques.
An experiment was performed to determine the rate of equilibration of deuterium between the ice and liquid phases of water in partially frozen soil. The results of this experiment are consistent with a diffusion rate of deuterium in ice of 1 or 2 tenbillionths sq cm/s. A method for calculating the approximate equilibration time, given the size of the ice crystals in the system, is provided. This calculation compares well with the experimental results.

39-1140
Regional and seasonal variations in snow-cover density in the U.S.S.R.
Bilello, M.A., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1984, CR 84-22, 70p., ADA-148 429, Refs. p.55-58.
Snow cover distribution, Snow density, Snow surveys, Snow depth, Topographic effects, Geography, Seasonal variations, Wind velocity, Forest canopy, Mapping, USSR.
Regional and seasonal variations in snow-cover density (SCD) in the U.S.S.R. were determined through the analysis of data obtained from all available Soviet literature. A relationship found between observed winter wind speeds and SCD values recorded from November through March made it possible to develop a snow-density map of the U.S.S.R. The map was divided into five general categories of SCD, ranging from values less than or equal to 0.21 g/cu cm at interior stations with very light winds to values greater than or equal to 0.31 g cu cm at arctic locations with strong winds. Since this literature survey indicated that the reported Soviet SCD values were incorrect due to instrumental errors, adjustments to the data in this study were required. Month-to-month investigation of the SCD data revealed a gradual increase in density from November to March and that the SCD values under forest canopies averaged from 4 to 14% lower than those recorded in open areas. Also included in this report are 1) a compilation of pertinent passages in the Soviet literature on SCD, 2) a map showing the location of SCD measurements, and 3) an average winter wind speed chart for the U.S.S.R.

39-1141
Crystalline structure of urea ice sheets used in modeling experiments in the CRREL test basin.
Gow, A.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1984, CR 84-24, 48p., ADA-148 434, 29 refs.
Ice crystal structure, Urea, Sea ice, Ice mechanics, Grain size, Ice models, Ice sheets, Tests.
This report describes the growth characteristics and crystalline textures of urea ice sheets which are now used extensively in the CRREL test basin for modeling sea ice. The aims of the report are to describe the different kinds of crystalline texture encountered in urea ice sheets and to show that even small variations in texture can drastically influence the mechanical behavior of urea ice sheets. Standard petrographic techniques for studying microstructure in thin sections were used on 24 urea ice sheets. These investigations entailed observations of the crystalline texture of the ice (including details of the subgrain structure), grain size measurements, and studies of the nature and extent of urea entrapment and drainage patterns in the ice. Increased knowledge of the factors controlling the crystalline characteristics of urea ice sheets has progressed to the point where test basin researchers at CRREL are now able to fabricate ice sheets with prescribed structures leading to predictable mechanical properties.

39-1142
Shore ice ride-up and pile-up features. Part 2: Alaska's Beaufort Sea coast—1983 and 1984.
Kovacs, A., *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1984, CR 84-26, 28p. + map, ADA-148 428, 16 refs.
Ice override, Ice pileup, Sea ice distribution, Ice mechanics, Fast ice, Beaches, Shores, Beaufort Sea, Arctic Ocean.
Observations of shore ice pile-up and ride-up along the Alaska Beaufort Sea coast in 1983 and 1984 are presented. New information on historical accounts of onshore ice movement, uncovered since publication of Part 1 in this series, is reported. An account is given of ice overtopping a concrete caisson exploration island in the Canadian Beaufort Sea.

39-1143
B.C. Hydro Homathko development generation: Landsat based mapping of snow cover and vegetation cover.
Hawes, D.B., Pegasus Earth Sensing Co., Canada, 1984, var.p. + 2 maps.
Snow surveys, Snow cover distribution, Vegetation, Landforms, Remote sensing, Watersheds, LANDSAT, Mapping, Topographic features, Classifications, Canada—British Columbia—Homathko River.

39-1144
Changes in strength of silt due to freeze-thaw.
Alkire, B.D., et al, *Journal of technical topics in civil engineering*, May 1984, 110(1), p.48-53, 7 refs.
Jashimuddin, J.
Frozen ground strength, Soil strength, Freeze thaw tests, Water content, Soil water, Shear strength, Sediments.

39-1145
Ice management to support the Kulluk drilling vessel.
Hnatiuk, J., et al, *Journal of Canadian petroleum technology*, Sep.-Oct. 1984, 23(5), p.40-46, 4 refs.
Wright, B.D.
Ice conditions, Offshore drilling, Offshore structures, Sea ice distribution, Caissons, Icebreakers, Ice navigation, Ice breaking, Beaufort Sea.

39-1146
Problems associated with wave propagation in geologic materials with snow as an example.
Brown, R.L., et al, *Journal of rheology*, 1984, 28(6), p.699-723, 35 refs.
Hansen, A.
Snow physics, Shock waves, Wave propagation, Snow deformation, Plastic properties, Rheology, Snow density, Thermodynamics, Snow melting, Stresses.

39-1147
Molecular erosion of ice by keV ion bombardment.
Ciavola, G., et al, *Radiation effects*, 1982, 65(1/4), p.407-412, 11 refs.
Foti, G., Torrisi, L., Pirronello, V., Strazzulla, G.
Ice erosion, Ions, Molecular structure, Radiation, Ice spectroscopy, Heavy water.

39-1148
Millimeter wave land clutter model.
Currie, N.C., et al, International Conference Radar-82, Oct. 18-20, 1982. Proceedings. IEE Conference publication, No.216, London, Institute of Electrical Engineers, 1982, p.385-389, 12 refs.
Zehner, S.P.
Snow physics, Wave propagation, Radar echoes, Backscattering, Wet snow, Vegetation, Models.

39-1149
Orientational correlation parameter and the dipole moment of a water molecule in ice VI.
Johari, G.P., et al, *Journal of chemical physics*, Mar. 1, 1980, 72(5), p.3201-3205, 19 refs.
Whalley, E.
High pressure ice, Molecular structure, Water, Anisotropy, Ice crystal structure.

39-1150
Study of aging phenomena in ice I(h) by internal friction measurements and X-ray topographic observations. (Etude du vieillissement de la glace I(h) par mesures de frottement interne et par observation en topographie aux rayons X).
Tatibouet, J., et al, *Journal de physique*, Oct. 1981, 42(10), p.1473-1480, In French with English summary. 34 refs.
Mai, C., Vassoille, R.
Ice physics, Internal friction, Ice crystal growth, X ray diffraction, Stresses, Time factor.

39-1151
Attempt to calculate snow cover development in a forest. (Versuche zur Berechnung der Schneedeckenentwicklung im Walde).
Graf, B., et al, *Zeitschrift fur Meteorologie*, 1980, 30(5), p.329-333, In German. 3 refs.
Rachner, M., Rönsch, H.
Snow cover distribution, Forest land, Snow accumulation, Metamorphism (snow).

39-1152
Management of ice-covered rivers: problems and perspectives.
Davar, K.S., et al, *Journal of hydrology*, May 1981, 51(1/4), p.245-253, 8 refs.
Elhadi, N.A.
River ice, Ice conditions, Ice cover, Hydraulics.

39-1153
Regularities of soil formation and weathering in the transition zone from the Eurasian continent to the Pacific Ocean. (Zakonomernosti pochvoobrazovaniia i vyvetrivaniia v zone perekhoda ot Evraziiskogo kontinenta k Tikhomu okeanu).
Ershov, IU.I., Moscow, Nauka, 1984, 262p., In Russian with English table of contents enclosed. Refs. p.253-261.
Forest soils, Soil analysis, Soil formation, Soil erosion, Soil classification, Weathering, Soil composition, Soil mapping, Cryogenic soils, Taiga, Plant ecology, Natural resources, Mining, Ecosystems, Landscape types, Electric power, Alpine landscapes, Baykal Amur railroad.

39-1154
Theoretical basis for obtaining friable ice. (Teoreticheskie osnovy polucheniia l'da rykhloi struktury).
Smorygin, G.L., Novosibirsk, Nauka, 1984, 157p., In Russian with English table of contents enclosed. Refs. p.147-155.
Artificial ice, Ice physics, Supercooling, Viscous flow, Self diffusion, Crystal growth, Latent heat, Hydraulic jets, Dispersions, Heat transfer.

39-1155
Crushing of rocks. [Razrushenie gornykh porod], Cherskiĭ, N.V., ed. Yakutsk, IAkutskiĭ filial SO AN SSSR, 1983, 138p. In Russian. For selected papers see 39-1156 through 39-1160. Refs. passim.
Earthwork, Geocryology, Permafrost physics, Frozen rock strength, Permafrost distribution, Drilling, Drills, Excavation, Electric fields, Permafrost thickness, Permafrost transformation, Mapping, Permafrost control, Electromagnetic properties.

39-1156
Geological and lithological conditions of drilling pile holes on BAM construction sites and the development of requirements for drilling instruments. [Gornogeologicheskie usloviia prokhodki skvazhin pod svai na ob"ektakh BAM i razrabotka trebovaniĭ k burovomu instrumentu],
Fazylov, R.G., et al, Razrushenie gornykh porod (Crushing of rocks) edited by N.V. Cherskiĭ, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1983, p.79-83, In Russian.
Bukin, S.N.
Permafrost physics, Frozen rock strength, Drilling, Drills.

39-1157
Geocryological peculiarities of perennially frozen strata in oil and gas fields of the Far North. [Geokriologicheskie osobennosti tolshchi vechnoĭ merzloty na neftegazovykh mestorozhdeniiakh Kraĭnego Severa],
Vasil'ev, R.V., et al, Razrushenie gornykh porod (Crushing of rocks) edited by N.V. Cherskiĭ, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1983, p.88-96, In Russian. 5 refs.
Guseva, E.A.
Geocryology, Permafrost distribution, Permafrost thickness, Continuous permafrost, Maps, Sporadic permafrost, Charts.

39-1158
Studying parameters of the physico-mechanical state of frozen rocks in intensive ultra-high-frequency electromagnetic fields. [Issledovanie parametrov fiziko-mekhanicheskogo sostoianiia merzlykh porod v intensivnykh elektromagnitnykh poliakh SVCh],
Nekrasov, L.B., et al, Razrushenie gornykh porod (Crushing of rocks) edited by N.V. Cherskiĭ, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1983, p.96-105, In Russian. 3 refs.
Petrov, V.S., Struchkov, O.A.
Permafrost physics, Permafrost control, Electric fields. Electromagnetic properties, Frozen rock strength, Thawing.

39-1159
Studying changes in strength and deformation of frozen rocks in intensive ultra-high-frequency fields. [Issledovanie izmeneniia prochnosti i kharaktera deformatsiĭ merzlykh porod v intensivnykh SVCh poliakh],
Nekrasov, L.B., et al, Razrushenie gornykh porod (Crushing of rocks) edited by N.V. Cherskiĭ, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1983, p.105-118, In Russian. 7 refs.
Petrov, V.S.
Permafrost physics, Frozen rock strength, Electric fields, Phase transformations, Thawing.

39-1160
Selecting effective types of drilling bits and regimes for exploration sites in Yakutia. [Vybor ratsional'nykh tipov dolot i rezhimov bureniia dlia prokhodki skvazhin na razvedochnykh ploshchadiakh IAkutiĭ],
Grigor'ev, A.N., et al, Razrushenie gornykh porod (Crushing of rocks) edited by N.V. Cherskiĭ, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1983, p.118-129, In Russian. 16 refs.
Grigor'ev, S.M., Skriabin, V.S.
Drilling, Permafrost physics, Frozen rock strength, Mechanical properties, Lithology, Acoustic measurement, Recording instruments.

39-1161
Eastern section of the BAM. [Vostochnyĭ flang BAMa],
Makartsev, M.K., *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.5-8, In Russian.
Railroad tracks, Embankments, Permafrost beneath structures, Baykal Amur railroad, Taiga, Swamps.

39-1162
Gradual perfecting of roadbed construction technology. [Posledovatel'naia optimizatsiia tekhnologii vozvedeniia zemlianogo polotna],
Mikhalevich, V.S., et al, *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.9-11, In Russian.
Earthwork, Permafrost beneath structures, Earth fills, Baykal Amur railroad, Design, Computer applications, Cost analysis.

39-1163
Improving blasthole drilling techniques. [Sovershenstvovanie burovzryvnykh rabot],
Fazylov, R.G., et al, *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.11-14, In Russian.
Bukin, S.N., Anisimov, D.I.
Roadbeds, Earthwork, Boreholes, Blasting, Permafrost beneath structures, Construction materials, Frozen fines, Baykal Amur railroad.

39-1164
Advanced construction of artificial structures. [Operezhaiushchee stroitel'stvo iskusstvennykh sooruzhenii],
Vasil'ev, V.A., et al, *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.12-13, In Russian.
Chumak, N.A.
Drilling, Railroad tracks, Concrete placing, Permafrost beneath structures, Bridges, Roadbeds, Foundations, Baykal Amur railroad, Roads, Construction equipment, Transportation.

39-1165
Electrification of the western section of the BAM. [Elektrifikatsiia zapadnogo uchastka BAMa],
Morits, E.IA., *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.15-16, In Russian.
Railroad tracks, Transmission lines, Tunnels, Electrical grounding, Baykal Amur railroad, Electric power, Power line icing.

39-1166
Power supply to the eastern section of the BAM. [Elektrosnabzhenie vostochnogo uchastka BAMa],
Buza, I.K., et al, *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.16-17, In Russian.
Kozlov, V.IA., Golovko, V.V.
Railroads, Electric equipment, Roadbeds, Power line supports, Embankments, Permafrost beneath structures, Bridges, Electric power, Stations.

39-1167
Organization of bridge construction in the western section of the BAM. [Organizatsiia stroitel'stva mostov na zapadnom uchastke BAMa],
Rasskazov, I.D., et al, *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.17-19, In Russian.
Ronin, B.G., Pyshko, L.V.
Railroads, Concrete placing, Permafrost beneath structures, Piers, Embankments, Bridges, Frozen fines, Ice lenses, Roads, Piles, Alluvium, Foundations.

39-1168
Construction of small and medium size bridges with all-sectional columnar supports. [Sooruzhenie malykh i srednikh mostov s polnosbornymi stolbchatymi oporami],
Blinkov, L.S., *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.20-21, In Russian.
Bridges, Piers, Reinforced concretes, Winter concreting, Concrete admixtures, Joints (junctions), Grouting, Baykal Amur railroad, Construction equipment.

39-1169
Mechanization of tunneling. [Mekhanizatsiia prokhodcheskikh rabot],
Kogan, V.Z., *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.22-25, In Russian.
Tunneling (excavation), Drilling, Construction equipment, Baykal Amur railroad, Electric power, Transportation, Permafrost.

39-1170
Designing the installation and fixing of permanent anchors. [K voprosu proektirovaniia zadelki postoiannykh ankerov],
Kolin, D.I., et al, *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.27-28, In Russian. 2 refs.
Skormin, G.A., Maloian, E.A.
Concrete structures, Anchors, Grouting, Mortars.

39-1171
River gates of the North. [Rechnye vorota Severa],
Tolmachev, R.A., *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.28-30, In Russian.
Ports, Permafrost beneath structures, Concrete structures, Hydraulic structures, Winter concreting, Foundations, Rock fills, Construction equipment, USSR—Lena River.

39-1172
Towns and villages along the BAM. [Goroda i poselki BAMa],
Sukhanov, N.V., *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.32-35, In Russian.
Foundations, Urban planning, Construction materials, Prefabrication, Municipal engineering, Large panel buildings, Transportation, Residential buildings, Permafrost beneath structures, Roads, Industrial buildings.

39-1173
Construction of drainage systems in bogs. [Sooruzhenie vodootvodov na mariakh],
Labendik, V.I., et al, *Transportnoe stroitel'stvo*, Oct. 1984, No.10, p.57-58, In Russian.
Chernyshov, V.G., Lunev, A.I.
Swamps, Drains, Earthwork, Site surveys, Active layer, Permafrost depth, Roadbeds, Drainage, Construction equipment, Cold weather construction, Site accessibility.

39-1174
Peculiarities of the processes of pressure-ridge formation in the northern Caspian Sea. [Osobennosti protsessov torosheniia ledianogo pokrova severnoĭ chasti Kaspiĭskogo moria],
Bukharitsin, P.I., *Vodnye resursy*, Nov.-Dec. 1984, No.6, p.115-123, In Russian. 8 refs.
Ice formation, Pressure ridges, Ice edge, Ice navigation, Wind factors, Ice cover thickness, Sea ice distribution, Sea level, Water transport.

39-1175
Structure, functional organization and dynamics of swamp ecosystems in Karelia. [Strukturno-funktsional'naia organizatsiia i dinamika bolotnykh ekosistem Karelii],
Elina, G.A., et al, Leningrad, Nauka, 1984, 128p., In Russian with English table of contents enclosed. Refs. p.118-127.
Kuznetsov, O.L., Maksimov, A.I.
Swamps, Ecosystems, Biomass, Organic soils, Peat, Forest land, Paludification, Plant ecology, Cryogenic soils, Frost penetration, Active layer, Landscape types, Forest tundra, Taiga, Classifications.

39-1176
Nuclear power plants in the Far North. [Atomnye elektrostantsii na Kraĭnem Severe],
Shadrin, A.P., Yakutsk, IAkutskiĭ filial SO AN SSSR, 1983, 122p., In Russian with abridged English table of contents enclosed. 184 refs.
Fuels, Equipment, Nuclear power, Design, Computer applications, Cost analysis.

39-1177
Micromorphology of cryogenic soils. [Mikromorfologiia kriogennykh pochv i gruntov],
Konishchev, V.N., et al, *Pochvovedenie*, Feb. 1977, No.2, p.119-125, In Russian with English summary. 9 refs. (Not translated in Soviet soil science).
Rogov, V.V.
Cryogenic soils, Loams, Soil composition, Active layer, Arctic landscapes, Hydrothermal processes, Tundra, Continuous permafrost.

39-1178
Report on snowdrifting problems and corrective actions on the Dempster Highway, N.W.T., kilometres 457, 458.5, 460, and 472.
Public Works Canada. Western Region, Feb. 1981, 6p. + figs.
Snowdrifts, Snow fences, Road maintenance, Winter maintenance, Snow removal, Countermeasures, Cost analysis, Trafficability, Canada—Northwest Territories—Richardson Mountains.

39-1179
Ship operations, 1982-1983.
McKinna, T.G., *Antarctic journal of the United States*, 1983, 18(5), p.304.
Icebreakers, Ice conditions.
Two icebreakers operated in the Antarctic this season in support of the U.S. Antarctic Research Program. USCGC *Polar Star* and USCGC *Glacier*. The dry cargo ship USNS *Southern Cross* and the tankship USNS *Maumee* provided the resupply support. Ship schedules were made based on *Polar star* breaking the channel with *Glacier* nearby to assist if necessary and to support science activities in McMurdo Sound and Ross Sea. The schedules allowed for maximum utilization of ship time for science support while escorting supply ships safely in and out of McMurdo Sound. *Polar Star* circumnavigated Antarctica visiting 14 foreign scientific stations and supporting a multidisciplinary scientific team. *Glacier* remained in the Ross Sea area conducting four separate scientific cruises. On its final departure from McMurdo, *Glacier* towed the damaged ice wharf to sea for disposal. A new wharf is to be constructed during the winter months.

39-1180
Oil spills: damage and recovery in tundra and taiga.
Linkins, A.E., et al, Restoration of habitats impacted by oil spills. Edited by J. Cairne, Jr. and A.L. Buikema, Jr., Boston, Butterworth, 1984, p.135-155, Refs p.150-155
Johnson, L.A., Everett, K.R., Atlas, R.M.
Oil spills, Tundra, Taiga, Revegetation, Damage, Environmental impact, Countermeasures.

39-1181
Antarctic ecology.
Laws, R.M., ed, London, Orlando, Academic Press, 1984, 850p. (2 vols.), For individual papers see: 39-1182 through 39-1189 or B-30977 through B-30979, B-30982 through B-30990, E-30980, I-30976 and J-30981. Numerous refs.
DLC QH84.2.A58 1984
Ecosystems, Cold tolerance, Cryobiology, Microclimatology.
The origin of these volumes is traced to SCAR Symposia on Antarctic Biology in 1962 (1B-1463), 1968 (5B-8120 and 5B-8534), and 1974 (7B-1319 [abstrs.] and 9B-19172). A fourth symposium met in 1983. The present volumes represent an update of the 1968 meeting. In fifteen chapters research progress is reviewed in specific areas. These include: the terrestrial environment; terrestrial plant biology; terrestrial microbiology, invertebrates, and ecosystems; introduced mammals; inland waters; *the marine environment; the marine flora; marine benthos;* marine zooplankton; fish; seabirds; seals; whales; marine interactions; and conservation and the Antarctic.

39-1182
Terrestrial environment.
Walton, D.W.H., Antarctic ecology, R.M. Laws, ed., London, Orlando, Academic Press, 1984, p.1-60, Bibliography p.51-60.
DLC QH84.2.A58 1984
Microclimatology, Periglacial processes, Soil water.
The geography of the Antarctic has been pieced together from the efforts of many nations over more than 200 years. Good topographical maps cover all of the continent and other maps in preparation show sub-ice details. A growing body of maps showing various hypotheses on the geological evolution of Gondwanaland to the present distribution of land in the southern hemisphere is the result of attempts to unite data from various disciplines into a common theory. Amidst the data and speculation of these other scientific disciplines there is much of great use to the biologist. Reviewed in this chapter are elements in climatology, geography, meteorology and pedology, which are of importance in a biological context with suggestions of some profitable lines for future research in these fields. (Auth.)

39-1183
Terrestrial plant biology of the sub-Antarctic and Antarctic.
Smith, R.I.L., Antarctic ecology, R.M. Laws, ed., London, Orlando, Academic Press, 1984, p.61-162, Bibliography p.139-162.
DLC QH84.2.A58 1984
Plant ecology, Vegetation.
This account presents a comprehensive overview of the macroscopic terrestrial vegetation and plant biology of the sub-Antarctic and Antarctic biome, and provides a synopsis of the main plant ecological and related investigations. No attempt has been made to review taxonomic literature or to draw comparisons with the sub-Arctic and Arctic biome. Also, due to length limitation, there is little interpretive discussion. (Auth.)

39-1184
Terrestrial microbiology, invertebrates and ecosystems.
Block, W., Antarctic ecology, R.M. Laws, ed., London, Orlando, Academic Press, 1984, p.163-236, Bibliography p.216-236.
DLC QH84.2.A58 1984
Soil microbiology, Ecosystems, Cold tolerance.
This contribution reviews the microbiology and the invertebrates of terrestrial communities throughout the Antarctic region and considers the variety of environmental adaptations which have evolved there. In particular, an examination is made of the mechanisms which produce invertebrate cold hardiness, and of the information available on terrestrial ecosystem structure and function. It is concluded that many of the adaptational features observed are peculiar to low temperature organisms, which combined with the particular trophic organization of antarctic terrestrial communities, have resulted in the development of ecosystems which are unique on this planet. (Auth.)

39-1185
Introduced mammals.
Bonner, W.N., Antarctic ecology, R.M. Laws, ed., London, Orlando, Academic Press, 1984, p.237-278, Bibliography p.273-278.
DLC QH84.2.A58 1984
Revegetation.
The primary species introduced to sub-antarctic and antarctic regions are composed of black rats, brown rats, domestic mice, cats, rabbits and reindeer. The sub-Antarctic islands have been exposed to the influence of man for only about 200 years, yet in that time many of them have been greatly affected by introduced species. Some of the consequences of these introductions to both flora and fauna are described in case studies. (Auth. mod.)

39-1186
Antarctic inland waters.
Heywood, R.B., Antarctic ecology, R.M. Laws, ed., London, Orlando, Academic Press, 1984, p.279-344, Bibliography p.332-344.
DLC QH84.2.A58 1984
Glacial lakes, Permafrost depth.
Although Antarctica as a whole is classed as a cold desert, water bodies do occur and these are discussed. The evolution of antarctic lakes is shown in the proglacial lakes, freshwater lakes, Signy Island lakes, Vestfold Hills lakes, dry valleys lakes, and others. Biological research in antarctic lakes is a relatively new activity with few production measurements to gauge reproduction success. The flora, microflora, and fauna of the lakes are discussed.

39-1187
Marine environment.
Foster, T.D., Antarctic ecology, R.M. Laws, ed., London, Orlando, Academic Press, 1984, p.345-371, 28 refs.
DLC QH84.2.A58 1984
Sea ice distribution, Ocean currents, Water chemistry, Water temperature.
Principal features of antarctic waters are shown on charts and discussed. These include the seasonal distribution of sea ice, *icebergs, and ice shelves; oceanic circulation; major ocean currents;* and chemical and thermal characteristics of primary water masses.

39-1188
Antarctic marine flora.
Heywood, R.B., et al, Antarctic ecology, R.M. Laws, ed., London, Orlando, Academic Press, 1984, p.373-419, Bibliography p.411-419.
Whitaker, T.M.
DLC QH84.2.A58 1984
Cryobiology.
The authors conclude that primary productivity in antarctic waters is no greater than any other waters of the earth except the Arctic regions. They review major studies on the various aspects of the question. They examine floral species distribution and habitats including diatoms, dinoflagellates, shelf- and ice-dwellers, and bottom dwellers living in a rain of fecal pellets. They review factors affecting species physiology: nutrient supply, temperature, light, and water column stability. They urge better measurements of chlorophyll *a*, the standard by which total production is gauged.

39-1189
Marine benthos.
White, M.G., Antarctic ecology, R.M. Laws, ed., London, Orlando, Academic Press, 1984, p.421-461, Bibliography p.454-461.
DLC QH84.2.A58 1984
Cryobiology.
In reviewing prior and on-going research, several aspects provide convenient groupings for describing present knowledge of the bottom dwellers. These include the biomass, density (abundance), diversity, origins of the various populations and their circulation into zoned distribution patterns, and associations/compatibilities between the various zones. Sub-ice ecologies are discussed and it is concluded that the substantial group of adaptations which seemingly are responses to the cold, do, in fact, result from an overall reduction in energy utilization as a method of survival in a cold, highly seasonal antarctic marine ecosystem.

39-1190
Methods of geochemical exploration used in northern Siberia. [Geokhimicheskie metody poiskov v severnykh raĭonakh Sibiri],
Polikarpochkin, V.V., ed, Novosibirsk, Nauka, 1984, 177p., In Russian. For selected papers see 39-1191 through 39-1202. Refs. passim.
Exploration, Placer mining, Slope processes, Permafrost hydrology, Continuous permafrost, Permafrost weathering, Minerals, Geochemistry, Taiga, Dispersions, Rock streams, Natural resources, Hydrothermal processes, Tundra, Solifluction, Alpine landscapes.

39-1191
Peculiarities of geochemical exploration in northern Siberia. [Osobennosti geokhimicheskikh poiskov v severnykh raĭonakh Sibiri],
Polikarpochkin, V.V., Geokhimicheskie metody poiskov v severnykh raĭonakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.11-18, In Russian. 8 refs.
Mining, Slope processes, Geological surveys, Permafrost hydrology, Geobotanical interpretation, Geochemistry, Continuous permafrost, Taiga, Active layer, Solifluction, Natural resources, Alpine landscapes.

39-1192
Geochemistry of landscapes in northern Siberia and its significance in exploration for ore deposits. [Geokhimiia landshaftov severnykh raĭonov Sibiri i ee znachenie dlia poiskov rudnykh mestorozhdeniĭ],
Perel'man, A.I., et al, Geokhimicheskie metody poiskov v severnykh raĭonakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.18-26, In Russian. 27 refs.
Geochemistry, Cryogenic soils, Geological surveys, Permafrost hydrology, Water chemistry, Exploration, Active layer, Landscape types, Natural resources, Continuous permafrost, Taiga.

39-1193
Peculiarities of formation of cryogenic halos and dispersion flows. [Osobennosti formirovaniia kriogennykh oreolov i potokov rasseianiia],
Shvartsev, S.L., Geokhimicheskie metody poiskov v severnykh raĭonakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.35-42, In Russian. 24 refs.
Geological surveys, Permafrost distribution, Geochemistry, Frost action, Minerals, Hydrothermal processes, Weathering, Periglacial processes, Exploration, Active layer.

39-1194
Classification of secondary dispersion halos of ore deposits in the Far North. [Sistematizatsiia vtorichnykh oreolov rasseianiia rudnykh mestorozhdeniĭ Kraĭnego Severa],
Pitul'ko, V.M., Geokhimicheskie metody poiskov v severnykh raĭonakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.42-45, In Russian.
Minerals, Slope processes, Permafrost distribution, Frost action, Permafrost weathering, Exploration, Geological surveys, Landscape types, Alpine landscapes, Active layer, Composition.

39-1195
Peculiarities of secondary lithochemical halos in permafrost areas. [Osobennosti vtorichnykh litokhimicheskikh oreolov v raĭonakh razvitiia mnogoletneĭ merzloty],
Kviatkovskiĭ, E.M., et al, Geokhimicheskie metody poiskov v severnykh raĭonakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.45-56, In Russian. 7 refs.
Kritsuk, I.N., Omel'chenko, M.M.
Minerals, Permafrost weathering, Geochemistry, Permafrost distribution, Exploration, Active layer, Permafrost structure, Slope processes, Rock streams, Solifluction.

39-1196
Formation and structure of secondary dispersion halos in low-mountain taiga landscapes of permafrost areas. [Osobennosti stroeniia i formirovaniia vtorichnykh oreolov rasseianiia v usloviiakh nizkogornykh taezhno-merzlotnykh landshaftov],
Miasnikov, A.A., et al, Geokhimicheskie metody poiskov v severnykh raĭonakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.56-61, In Russian.
Golovina, G.N.
Minerals, Mountain soils, Cryogenic soils, Active layer, Permafrost depth, Taiga, Landscape types, Exploration, Slope processes, Mining.

39-1197
Geochemical exploration of bald-peak landscapes. [Geokhimicheskie poiski v gol'tsovykh landshaftakh],
Taĭsaev, T.T., Geokhimicheskie metody poiskov v severnykh raĭonakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.61-67, In Russian. 6 refs.
Ground ice, Rock streams, Slope processes, Alpine landscapes, Permafrost distribution, Exploration, Geochemistry, Deserts, Minerals, Solifluction.

39-1198
Formation of mechanical dispersion halos under the influence of different processes, active in the cryolithozone, in relation to exploration for basic sources (from experimental data). [Osobennosti formirovaniia mekhanicheskikh oreolov rasseianiia pod vliianiem razlichnykh protsessov v zone kriolitogeneza v sviazi s prognozom korennykh istochnikov (po eksperimental'nym dannym)],
Khmeleva, N.V., et al, Geokhimicheskie metody poiskov v severnykh raĭonakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.67-73, In Russian. 6 refs.
Eliseeva, O.A., Shevchenko, B.F., Ivochkina, I.G.
Permafrost weathering, Minerals, Placer mining, Alluvium, Slope processes, Rock streams, Solifluction, Experimentation.

39-1199
Using mobile elements in search for deeply buried ore bodies. [K ispol'zovaniiu podvizhnykh form elementov dlia poiskov glubokozalegaiushchikh rudnykh tel],
Vinokurov, I.P., et al, Geokhimicheskie metody poiskov v severnykh raionakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.73-79, In Russian. 14 refs.
Tuz, N.S.
Cryogenic soils, Soil water migration, Minerals, Permafrost depth, Water chemistry, Slope processes, Subarctic landscapes, Taiga, Solifluction, Geocryology.

39-1200
Combined geochemical methods used in evaluation of placer-ore content of closed cryolithozone areas in Yakutia. [Kompleksirovanie geokhimicheskikh metodov pri otsenke rudno-rossypnoi metallonosnosti zakrytykh raionov kriolitozony na primere IAkutii],
Makarov, V.N., et al, Geokhimicheskie metody poiskov v severnykh raionakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.79-84, In Russian. 9 refs.
Pitul'ko, V.M., Savvin, A.A., Terent'ev, V.N
Placer mining, Minerals, Permafrost distribution, Permafrost structure, Alluvium, Frozen fines.

39-1201
Exploration of dispersion streams under permafrost conditions. [Poiski po potokam rasseianiia v usloviiakh kriolitozony],
Gundobin, G.M., et al, Geokhimicheskie metody poiskov v severnykh raionakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.102-108, In Russian. 6 refs.
Kolesnikov, V.N.
Slope processes, Continuous permafrost, Minerals, Placer mining, Mountains.

39-1202
Using the mercury-vapor technique of exploration for ore deposits in northern Siberia. [Primenenie gazortutnoi s"emki pri poiskakh rudnykh mestorozhdenii v severnykh raionakh Sibiri],
Sveshnikov, G.B., et al, Geokhimicheskie metody poiskov v severnykh raionakh Sibiri (Methods of geochemical exploration used in northern Siberia) edited by V.V. Polikarpochkin, Novosibirsk, Nauka, 1984, p.150-153, In Russian. 8 refs.
Mash'ianov, N.R.
Minerals, Exploration, Geochemistry, Subarctic landscapes, Tundra, Taiga, Continuous permafrost.

39-1203
Arctic news record, Summer 1984, Vol.3 No.2. Bergen, Norway, Sep. 1984, 62p., For selected papers see: 39-1204 and 39-1205, or D-30993 and F-30992.
Sea ice distribution, Icebreakers, Expeditions, Icebergs, Mines (excavations), Minerals, Pipelines, Ports.
In a series of short news items the journal gives a wide-ranging overview of current cold regions technology. A few longer items (1-3p.) contain additional details on special features. The news items provide international coverage of activities in or near coastal areas. Pipeline construction, icebreakers, antarctic expeditions, gas exploration, and iceberg towing are a few of the topics of interest.

39-1204
Are antarctic icebergs towable.
Orheim, O., *Arctic news record*, Sep. 1984, 3(2), p.36-38.
Iceberg towing, Ice (water storage), Ice mechanics, Cost analysis.
A brief review is given of the possibilities of towing large antarctic icebergs to arid regions of the Southern Hemisphere. Towing to such places as Saudi Arabia seems a remote possibility due to water loss en route. A practical towable berg size is given as 1000x500x200 meters. The physical problems of a towing operation are discussed: stability of the icebergs, wave energy created by the berg and the effect of sea swells. Comparisons are made between towing costs and costs of water at destination and costs of sea water desalination.

39-1205
Norwegian Polar Research Institute's 1984-85 Antarctic Expedition. *Arctic news record*, Sep. 1984, 3(2), p.39.
Research projects, Icebreakers, Sea ice, Expeditions.
A brief outline is given of the Expedition which will concentrate on programs in geology and glaciology. Parties of geologists will go ashore in Queen Maud Land while the glaciologists will operate from aboard the Norwegian Coast Guard Icebreaker *Andenes* studying sea ice. They will all go together for additional studies at Bouvet I. Capabilities and structural characteristics of *Andenes* are noted.

39-1206
Hydrology and glaciology dry valleys, Antarctica annual report for 1980-81.
Chinn, T.J., et al, *New Zealand. Water and Soil Science Center. Report*, Mar. 1983, WS 900, 64p.
Maze, I.
Lake ice, Ice cover thickness, Glacier ablation, Glacier ice, Water level, Antarctica—Taylor Valley, Antarctica—Wright Valley.
This programme investigates long and short-term climatic fluctuations in the dry valleys region by the study of glaciers, summer meltwater streams and the levels of enclosed lakes. This report presents technical details of the work covered, methods used, problems encountered and the results obtained over the 1980-81 summer. Flows were recorded at two sites on the Onyx River. Lake Vanda rose by 0.212 m. Levels of other enclosed lakes changed by small amounts over the summer. 6 showed small rises, while 3 fell. Levels fell in all but Lake Bonney over the calendar year ending Jan. 1981. This season, Don Juan Pond, a strongly saline pond not known to freeze in winter, was included in the lake level studies. Ice ablation and thickness measurements were continued on Lake Vanda. Ablation measurements of glacier snouts were continued on three glaciers, together with mass balance measurements on Heimdall Glacier. Studies of the coupling zone between glacier ice and lake ice where a glacier enters a lake were initiated at two sites, one at Wright Lower Glacier and Lake Brownworth and the other at Taylor Glacier and Lake Bonney. Surface and subsurface ice types were studied and both sites ice-core drilled and samples studied in thin section. (Auth. mod.)

39-1207
Instructions for using the 250 sq cm shear frame to evaluate the strength of a buried snow surface.
Sommerfeld, R.A., *U.S. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. U.S. Forest Service research note*, July 1984, RM-446, 6p., 8 refs.
Snow strength, Snow mechanics, Snow surface, Avalanche formation, Surface properties, Shear properties, Tests.

39-1208
Physics of the patterns of frost on a window, plus an easy-to-read sundial.
Walker, J., *Scientific American*, Dec. 1980, 243(6), p.230-238.
Frost, Windows, Ice optics, Ice crystal structure, Ice formation, Temperature effects, Sunlight.

39-1209
Suction of water during freezing, of soil: a macroscopic model. [La succion cryogénique dans la congélation des sols: un modèle macroscopique],
Blanchard, D., et al, *Academie des sciences, Paris. Comptes rendus hebdomadaires des seances. Serie 2*, Jan. 4, 1982, 294(1), p.1-4. In French with English summary. 12 refs.
Frémond, M.
Soil freezing, Soil water migration, Geocryology, Unfrozen water content, Mathematical models, Temperature effects.

39-1210
Dynamic and aeroelastic action of guy cables.
Karna, T., *Finland. Technical Research Centre. Publications*, May 1984, No.18, 69p. + appends., 73 refs.
Cables (ropes), Icing, Atmospheric circulation, Dynamic properties, Wind pressure, Mathematical models, Design, Wind tunnels.

39-1211
Condensed papers. [Kurzfassungen der Vorträge], *International Meeting on Alpine Meteorology*, 17th, Berchtesgaden, 1982, *Annalen der Meteorologie*, 1982, No.19, 293p., In German and English. Refs. passim. For selected papers see 39-1212 through 39-1219.
Mountain glaciers, Meteorology, Ice surveys, Snow surveys, Ice physics, Snow physics.

39-1212
Pleistocene glaciation of the Tibetan plateau based on recent data on snow line depression in NE Tibet from the First German-Chinese Expedition to Tibet, 1981. [Die Eiszeitliche Vergletscherung des tibetanischen Hochplateaus aufgrund neuerer Werte der Schneegrenzdepression in Nordost-Tibet nach der "Ersten Deutsch-Chinesischen Tibet-Expedition 1981"],
Dronia, H., *Annalen der Meteorologie*, 1982, No.19, p.254-255, In German. 5 refs.
Alpine glaciation, Pleistocene, Snow line, Tibet.

39-1213
Notes on ice in the hydrosphere. [Bemerkungen zum Eis in der Hydrosphäre],
Reinwarth, O., *Annalen der Meteorologie*, 1982, No.19, p.259-265, In German. 45 refs.
Glacial hydrology, Ice (water storage), Glacier mass balance, Glacier oscillation, Glacier surveys.

39-1214
Wurtenkees in the Goldberg group (Hohe Tauern)—a glacier of "anomalous" behavior. [Das Wurtenkees in der Goldberggruppe (Hohe Tauern)—Ein Gletscher mit "anomalem" Verhalten],
Böhm, R., *Annalen der Meteorologie*, 1982, No.19, p.270-272, In German. 9 refs.
Glacier surveys, Mountain glaciers, Glacier flow, Glacier oscillation, Austria—Hohe Tauern.

39-1215
Statistical techniques to modelize the snow cover evolution during the spring in mountainous environment.
Risser, V., *Annalen der Meteorologie*, 1982, No.19, p.273-276, With French summary. 5 refs.
Snow cover distribution, Mathematical models, Mountains, Statistical analysis, Seasonal variations, Meteorological data.

39-1216
Ice accretion at Mt. Capellino during the winter 1981-82.
Flocchini, F., et al, *Annalen der Meteorologie*, 1982, No.19, p.277-279, 8 refs.
Palau, C., Nicolini, P.
Ice accretion, Ice solid interface, Ice storms, Ice surveys, Mountains, Precipitation (meteorology), Italy—Capellino Mountain.

39-1217
Spectral albedo of snow and ice. [Die spektrale Albedo von Schnee und Eis],
Kuhn, M., et al, *Annalen der Meteorologie*, 1982, No.19, p.282-283, In German. 2 refs.
Stockinger, F.
Snow optics, Ice optics, Albedo, Metamorphism (snow), Snow crystal structure.

39-1218
Albedo studies on a glacier by means of black-and-white photographs. [Albedo-Untersuchungen an einem Gletscher mit Hilfe von Schwarzweiss-Fotografien],
Kiesle, H., *Annalen der Meteorologie*, 1982, No.19, p.284-286, In German.
Albedo, Glacier ice, Ice optics, Photography.

39-1219
Numerical study on icing of continental and maritime convective clouds. [Eine numerische Studie über die Vereisung kontinentaler und maritimer konvektiver Wolken],
Beheng, K.D., *Annalen der Meteorologie*, 1982, No.19, p.287-288, In German. 9 refs.
Supercooled clouds, Ice formation, Ice crystals, Analysis (mathematics).

39-1220
Some ice crystals that made halos.
Tape, W., *Optical Society of America. Journal*, Dec. 1983, 73(12), p.1641-1645, 19 refs.
Ice optics, Ice crystal structure, Light scattering, Atmospheric physics.

39-1221
Colors of snow, frozen waterfalls, and icebergs.
Bohren, C.F., *Optical Society of America. Journal*, Dec. 1983, 73(12), p.1646-1652, 19 refs.
Snow optics, Ice optics, Light scattering, Albedo, Atmospheric physics, Ice crystal size, Icebergs, Radiation absorption, Grain size, Bubbles.

39-1222
Landscape as viewed in the 320-nm ultraviolet.
Livingston, W., *Optical Society of America. Journal*, Dec. 1983, 73(12), p.1653-1657, 18 refs.
Photography, Landscape types, Snow cover effect, Reflectivity, Albedo, Ultraviolet radiation.

39-1223
Calculation of ice depolarization on satellite radio paths.
Tsolakis, A., et al, *Radio science*, Nov.-Dec. 1983, 18(6), p.1287-1293, 18 refs.
Stutzman, W.L.
Ice physics, Polarization (waves), Ice crystals, Radio waves, Scattering, Microwaves, Analysis (mathematics), Spacecraft, Theories.

39-1224
Observations on ice layers.
Heide, H.-G., *Ultramicroscopy*, 1984, 14(3), p.271-278, 15 refs.
Ice physics, Electron microscopy, Ice crystal structure, Microstructure, Thermal conductivity, Temperature effects, Mass balance, Ions, Low temperature tests.

39-1225
Sediments above the upper regional unconformity: thickness, seismic stratigraphy and outline of the glacial history.
Solheim, A., et al. *Oslo. Norsk polarinstitutt. Skrifter*, 1984, No.179B, 26p. Refs. p.24-26.
Kristoffersen, Y.
Bottom sediment, Ocean bottom, Paleoclimatology, Glacial geology, Geomorphology, Stratigraphy, Seismic reflection, Thickness, Barents Sea.

39-1226
Ice in the Beaufort Sea.
Minon, R., comp. BINS bibliographic series, No.6, June 1984, 78p.
Boreal Institute for Northern Studies, Edmonton, Alberta.
Ice surveys, Sea ice, Subsea permafrost, Bibliographies, Offshore structures, Meteorological factors, Beaufort Sea.

39-1227
Report of the International Ice Patrol service in the North Atlantic Ocean; Season of 1980.
U.S. Coast Guard. *U.S. Coast Guard. Bulletin*, Mar. 18, 1981, No.66, Its report No.CG-188-35, 73p. ADA-113 555.
Ice reporting, Ice conditions, Sea ice distribution, Aerial surveys, Drift, Charts, Seasonal variations, Meteorological data, Icebergs, International cooperation, Atlantic Ocean.

39-1228
Report of the International Ice Patrol service in the North Atlantic Ocean; Season of 1981.
U.S. Coast Guard, *U.S. Coast Guard. Bulletin*, July 29, 1983, No.67, Its report No.CG-188-36, 47p. ADA-134 791.
Ice reporting, Sea ice distribution, Ice conditions, Icebergs, Aerial surveys, Charts, International cooperation, Seasonal variations, Meteorological data, Atlantic Ocean.

39-1229
***Irradiation as an alternative for disinfection of* domestic waste in the Canadian Arctic.**
IEC International Environmental Consultants, Ltd., Islington, Ontario, Sewage Collection and Treatment, Report No.SCAT-6; NHA-5414-81/5, Ottawa, Canada Mortgage and Housing Corp., 1981, 115p., DE83-701 320, Refs. p.78-80.
Waste treatment, Gamma irradiation, Cold weather performance, Water treatment, Sewage, Liming, Ultraviolet radiation, Bacteria, Safety, Canada.

39-1230
System for the investigation of peat bog by radar. Final report. Stage 2(2). {Ett system för torvmarksundersökning med radar. Slutrapport. Etapp 2(2)}.
Bjelm, I., et al, *Nämnden för energiproduktionsforskning. Rapport*, Jan. 1982, NE-SBT-82-10, 132p., DE83-750 778, In Swedish.
Ulriksen, P.
Peat, Swamps, Radar echoes, Frozen ground, Environmental protection, Snow cover effect, Mapping, Vehicles, Thickness.

39-1231
Seasonal performance of air conditioners: the effect of frost formation on the performance of a parallel-plate heat exchanger.
O'Neal, D.L., et al. U.S. Dept. of Energy, Report No.-DOE/CS/23337-T4, Lafayette, IN, Purdue University, Dec. 1982, 187p., DE83-016 057, Ph.D. thesis. 38 refs.
Tree, D.R.
Ice formation, Frost, Heat transfer, Thermal conductivity, Plates, Cooling systems, Density (mass/volume), Temperature effects, Humidity, Tests.

39-1232
Cloud physics investigations by the University of Wyoming in HIPLEX 1977-1982.
Cooper, W.A., et al, *Wyoming University, Laramie. Dept of Atmospheric Science. Report*, Nov. 1982, AS-142, 135p. PB84-106 756.
Lawson, R.P., Rodi, A.R., Cerni, T.A.
Cloud physics, Supercooled clouds, Cloud seeding, Ice formation, Weather modification.

39-1233
Proficiency testing for thermal insulation materials in the National Voluntary Laboratory Accreditation Program.
Kirkpatrick, D., et al, International Conference on Thermal Conductivity, 17th, Gaithersburg, MD, June 15-19, 1981. Proceedings, 1983, p.497-506. PB84-106 970.
Horlick, J.
Thermal insulation, Thermal conductivity, Materials, Tests, Laboratory techniques, Standards.

39-1234
NOAA (National Oceanic and Atmospheric Administration) satellite programs briefing.
U.S. National Environmental Satellite, Data, and Information Service, *U.S. National Oceanic and Atmospheric Administration. Report*, Aug. 1983, NOAA-83-101 903, 209p. PB84-108 349.
Sea ice distribution, Remote sensing, Vegetation, LANDSAT, Radiometry, Infrared mapping, Meteorological instruments, Measuring instruments.

39-1235
Machine classification of cloud particle types.
Hunter, H.E., *U.S. Air Force. Geophysical Laboratory, Hanscom AFB, MA. Technical report*, Aug. 1982, AFGL-TR-82-0298, 114p. ADA-123 402/0.
Ice crystal structure, Supercooled clouds, Ice formation, Ice crystal growth, Classifications.

39-1236
Landsat-D investigations in snow hydrology.
Dozier, J., *U.S. National Aeronautics and Space Administration. Contractor report*, Sep. 30, 1983, NASA-CR-174519, 2p. N84-115 45/0
Snow hydrology, Remote sensing, Snow cover distribution, Mapping, LANDSAT, Mountains, United States—California—Sierra Nevada.

39-1237
Storage of automobiles in parking lots at low temperatures. {Bezgarazhnoe khranenie avtomobilei pri nizkikh temperaturakh}.
Kramarenko, G.V., et al, Moscow, Transport, 1984, 136p., In Russian with English table of contents enclosed. 29 refs.
Nikolaev, V.A., Shatalov, A.I.
Motor vehicles, Winter maintenance, Cold weather operation, Cold weather performance, Heating, Lubricants.

39-1238
Seismic stability of bridges. {Seismostoikost' mostov},
Shestoperov, G.S., Moscow, Transport, 1984, 143p., In Russian with abridged English table of contents enclosed. 79 refs.
Embankments, Bridges, Permafrost beneath structures, Earthquakes, Slope processes, Thixotropy, Avalanches, Mudflows, Baykal Amur railroad.

39-1239
Winter maintenance of signaling, interlocking and blocking devices in winter. {Obsluzhivanie ustroistv STsB v zimnii period},
Shtul'man, M.A., et al, Moscow, Transport, 1984, 72p., In Russian with abridged English table of contents enclosed. 14 refs.
Fetisov, V.D.
Railroad tracks, Electric heating, Cold weather operation, Winter maintenance, Snow removal, Lubricants, Railroads, Electric power.

39-1240
Bearing capacity of pile foundations in sagging loess soils. {Nesushchaia sposobnost' svainykh fundamentov v lessovykh prosadochnykh gruntakh},
Buslov, A.S., et al, Tashkent, Fan, 1983, 105p., In Russian with English table of contents enclosed. 125 refs.
Korzh, I.V.
Foundations, Piles, Loess, Waterproofing, Resins, Lubricants, Construction materials, Bearing strength.

39-1241
Field season in Victoria Land, 1981-1982.
Fudali, R.F., et al, *Smithsonian Institution. Smithsonian contributions to the earth sciences*, 1984, No.26, p.9-16, 3 refs.
Schutt, J.W.
DLC QE1.S227
Glacier ablation, Antarctica—Victoria Land.
The 1981-1982 field season activities included a resurvey of ice ablation rates at the Allan Hills triangulation network, the recovery of 387 meteorite specimens, and a gravity survey to model the ice-bedrock interface, also at Allan Hills, South Victoria Land. Reconnaissance meteorite searches, conducted in North Victoria Land, resulted in no new finds.

39-1242
Ablation and ice movement at the Allan Hills Main Icefield between 1978 and 1981.
Schultz, L., et al, *Smithsonian Institution. Smithsonian contributions to the earth sciences*, 1984, No.26, p.17-22, 14 refs.
Annexstad, J.O.
DLC QE1.S227
Glacier ablation, Velocity measurement, Antarctica—Victoria Land.
The ablation rate of the ice at the Allan Hills meteorite icefield averages about 5 cm/year. The ice from the eastern antarctic ice sheet approaching the Allan Hills slows down and becomes stagnant. The ice velocity 13 km west of the Allan Hills is about 1m/year, at a distance of about 5 km from the Allan Hills it is almost zero. The experimental uncertainties are too high to determine vertical ice velocities. (Auth.)

39-1243
***Possible* effects of snow and ice avalanches on artificial and natural lakes.** {Mögliche Auswirkungen von Schneelawinen und Gletscherabbrüchen auf künstliche und natürliche Seen}.
Huber, A., International Congress Interpraevent 1984, Villach, Austria, {1984}, 12p., In German with English summary. 6 refs.
Avalanche deposits, Icefalls, Rocks, Icebound lakes, Water waves, Wave propagation, Impact strength, Sliding, Models.

39-1244
Process industries in Alaska.
Downey, R.J., *Energy progress*, Dec. 1982, 2(4), p.196-198.
Cold weather construction, Winter concreting, Transportation, Engineering, Design, United States—Alaska.

39-1245
Prudhoe Bay field oil and gas production facilities.
Swyter, J.P., *Energy progress*, Dec. 1982, 2(4), p.202-206.
Permafrost beneath structures, Tundra, Natural resources, Piles, Heat loss, Frost protection, United States—Alaska—Prudhoe Bay.

39-1246
Motorway traffic control system.
Brinkman, A., et al, *Philips telecommunication review*, June 1984, 42(2), p.63-73, 1 ref.
Bloemendaal, A.I.
Ice detection, Fog, Road maintenance, Equipment.

39-1247
Influence of polymer microparticles on freeze-thaw resistance of structural lightweight aggregate concrete.
Chandra, S., et al, *International journal of cement composites and lightweight concrete*, May 1982, 4(2), p.111-115, 7 refs.
Aavik, J., Berntsson, L.
Concrete aggregates, Concrete durability, Freeze thaw cycles, Polymers, Frost resistance, Air entrainment, Reinforced concretes, Microstructure, Tests.

39-1248
Strength and deformation of steel fibre reinforced concrete at very low temperature.
Rostásy, F.S., et al, *International journal of cement composites and lightweight concrete*, Feb. 1984, 6(1), p.47-51, 4 refs.
Springer, K.H.
Concrete strength, Concrete durability, Reinforced concretes, Low temperature tests, Steels, Compressive properties, Deformation.

39-1249
Differential radar scattering properties of model hail and mixed-phase hydrometeors.
Aydin, K., et al, *Radio science*, Jan.-Feb. 1984, 19(1), p.58-66, 20 refs.
Seliga, T.A., Bringi, V.N.
Ice physics, Hailstones, Radar echoes, Ice detection, Scattering, Reflectivity, Ice water interface, Remote sensing, Phase transformations, Snow pellets, Models.

39-1250
Scattering properties of hydrometeors as measured by dual-polarization Doppler radar during CCOPE.
Moninger, W.R., et al, *Radio science*, Jan.-Feb. 1984, 19(1), p.149-156, 15 refs.
Kropfli, R.A., Pasqualucci, F.
Ice physics, Snow physics, Ice water interface, Snow pellets, Remote sensing, Raindrops, Supercooled clouds, Polarization (waves).

39-1251
Extent of Archaean and Late Proterozoic rocks under the ice cap of Princess Elizabeth Land, Antarctica, inferred from geophysics.
Wellman, P., et al, *Australia. Bureau of Mineral Resources, Geology and Geophysics. BMR journal,* Sept. 1982, 7(3), p.213-218, 17 refs.
Williams, J.W.
DLC QE340.A37a
Ice cover thickness, Antarctica—Princess Elizabeth Land.
A helicopter survey has mapped gravity and magnetic anomalies and ice thickness over a 100 km by 100 km ice cap area, inland from coastal outcrops of Archaean and Late Proterozoic rocks of the Princess Elizabeth Land coast. The gravity and magnetic anomalies indicate that there is no major change in crustal structure across the boundary between Archaean and Late Proterozoic rocks. The Archaean rocks of the Vestfold Hills do not extend further inland, but they may extend under Prydz Bay or as a narrow coastal strip under ice inland from the West Ice Shelf, 150 km to the northeast of the Vestfold Hills. Late Proterozoic rocks probably underlie most of the ice cap along the coast. (Auth.)

39-1252
Analysis of diffusion wave flow routing model with application to flow in tailwaters.
Ferrick, M.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Mar. 1983, CR 83-07, 31p., ADA-128 142, 18 refs.
Bilmes, J., Long, S.E.
Dams, Water flow, Water waves, Hydrology, River flow, Flow measurement, Mathematical models, Diffusion.
Peak power generation with hydropower creates tailwater flow conditions characterized by high and low flows with abrupt transitions between these states. Flows occurring in tailwaters typically form sharp-fronted, large-amplitude waves of relatively short period. An understanding of the mechanics of downstream propagation of these waves is important both for direct application in studies of the tailwater and because of the similarity of these waves to those following a dam break. An analysis of the dynamic equations of open channel flow is used to quantify the relative importance of flow wave convection, diffusion and dispersion in rivers. The relative importance of each process is related to the relative magnitude of terms in the dynamic equations, providing a physical basis for model formulation. A one-dimensional diffusion wave flow routing model, modified for tailwaters, simulates the important physical processes affecting the flow and is straightforward to apply. The model is based upon a numerical solution of the kinematic wave equation.

39-1253
Current increment of spruce stands in the Far North. [Tekushchiĭ prirost el'nikov Kraĭnego severa].
Gusev, I.I., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Lesnoĭ zhurnal,* 1984, No.5, p.5-8, In Russian. 8 refs.
IAroslavtsev, S.V.
Forestry, Plant physiology, Plant ecology, Arctic landscapes, Taiga, Cryogenic soils, Continuous permafrost.

39-1254
Allowing for the settlement of embankments built on sagging bases. [Uchet osadok nasypeĭ na prosadochnykh osnovaniiakh],
Guletskiĭ, V.V., et al, *Transportnoe stroitel'stvo,* Nov. 1984, No.11, p.8, In Russian.
Minaĭlov, G.P.
Roadbeds, Embankments, Permafrost beneath structures, Permafrost bases, Active layer, Permafrost depth, Settlement (structural), Ground thawing.

39-1255
On a scientific basis. [Na nauchnoĭ osnove],
Blinkov, L.S., *Transportnoe stroitel'stvo,* Nov. 1984, No.11, p.11-12, In Russian.
Bridges, Foundations, Piers, Supports, Permafrost bases, Piles, Reinforced concretes, Prefabrication.

39-1256
Experimental modular transformer sub-stations. [Opytnye ob"emno-blochnye transformatornye podstantsii],
Nartsissov, O.A., et al, *Transportnoe stroitel'stvo,* Nov. 1984, No.11, p.23-24, In Russian.
Morits, E.IA., Grinblat, I.S.
Modular construction, Industrial buildings, Electric power, Prefabrication, Reinforced concretes, Frost resistance.

39-1257
Structural design. [Konstruktorskie razrabotki],
Shmakov, V.P., *Transportnoe stroitel'stvo,* Nov. 1984, No.11, p.31-35, In Russian.
Construction equipment, Permafrost beneath structures, Earthwork, Drills, Boreholes, Blasting, Railroad tracks, Embankments, Baykal Amur railroad, Slopes.

39-1258
Thermal properties of soils.
Farouki, O.T., *U.S. Army Cold Regions Research and Engineering Laboratory,* Dec. 1981, M 81-01, 136p., ADA-111 734, Refs. p.125-132.
Frozen ground thermodynamics, Permafrost heat transfer, Frozen ground mechanics, Soil physics, Soil mechanics, Thermal conductivity, Soil water, Soil freezing.
This monograph describes the thermal properties of soils, unfrozen or frozen. The effects on these properties of water and its phase changes are detailed. An explanation is given of the interaction between moisture and heat transfer. Other influences on soil thermal properties are described, including such factors as soil composition, structure, additives, salts, organics, hysteresis and temperature. Techniques for testing soil thermal conductivity are outlined and the methods for calculating this property are described. The monograph gives the results of an evaluation of these methods whereby their predictions were compared with measured values, thus showing their applicability to various soil types and conditions.

39-1259
Evaluating the heat pump alternative for heating enclosed wastewater treatment facilities in cold regions.
Martel, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* May 1982, SR 82-10, 23p., ADA-116 385, 11 refs.
Phetteplace, G.E.
Heat recovery, Waste treatment, Water treatment, Pumps, Cost analysis.
This report presents a five-step procedure for evaluating the technical and economic feasibility of using heat pumps to recover heat from treatment plant effluent. The procedure is meant to be used at the facility planning level by engineers who are unfamiliar with this technology. An example of the use of the procedure and general design information are provided. Also, the report reviews the operational experience with heat pumps at wastewater plants located in Fairbanks, Alaska, Madison, Wisconsin, and Wilton, Maine.

39-1260
Limnological investigations: Lake Koocanusa, Montana. Part 1: Pre-impoundment study, 1967-1972.
Bonde, T.J.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Oct. 1982, SR 82-21, 184p., ADA-119 632, Refs. p.76-78.
Bush, R.M.
Limnology, Lake water, Dams, Water pollution, Reservoirs, Nutrient cycle, United States—Montana—Koocanusa, Lake.
This report documents the effects of the construction of Libby Dam upon the water quality of the United States portion of the Kootenai River during the pre-impoundment phase of a long-term water quality study. Water quality problems during dam construction appeared to be restricted to short-term increases in suspended sediment and turbidity which suppressed the aquatic insect population in the river downstream. Abnormally high background concentrations and abrupt chemical changes in water quality during the course of the study were attributed to industrial discharges from a fertilizer plant and mining operation located on an upstream tributary to the river. Nutrient loadings of nitrogen and phosphorus were found to be of sufficient magnitude to predict the development of eutrophic conditions following impoundment suggesting that efforts in controlling nutrient point sources be continued.

39-1261
Shallow snow model for predicting vehicle performance.
Harrison, W.L., *U.S. Army Cold Regions Research and Engineering Laboratory,* Oct. 1981, CR 81-20, 21p., ADA-108 343, 63 refs.
Snow accumulation, Motor vehicles, Cold weather performance, Traction, Snow cover effect, Ice cover effect, Slush, Snow depth, Ground thawing, Forecasting, Models.
A historical review of research is presented to establish the state-of-the-art for analyzing the behavior of vehicles in shallow snow. From this review, the most comprehensive and promising model is put together to establish a first-cut performance prediction model for vehicles operating in shallow snow, slush, ice and thawing soils.

39-1262
Development of a rational design procedure for overland flow systems.
Martel, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Feb. 1982, CR 82-02, 29p., ADA-113 762, 22 refs.
Jenkins, T.F., Diener, C.J., Butler, P.L.
Sewage treatment, Water treatment, Waste treatment, Flooding, Design, Purification.
This report describes the development of a new design procedure for overland flow systems that is based on hydraulic detention time, a familiar concept in wastewater treatment process design. A two-year study was conducted at Hanover, New Hampshire, on a full-scale overland flow site to obtain performance data in relation to detention time. Kinetic relationships were developed for removal of biochemical oxygen demand, total suspended solids, ammonia, and total phosphorus. Also, an empirical relationship was developed to predict hydraulic detention time as a function of application rate, terrace length, and slope. These relationships were validated using published data from other systems. An advantage of the new procedure, which should significantly reduce site preparation costs, is that it allows overland flow systems to be designed for a wide range of site conditions as long as detention time requirements are met.

39-1263
On the temperature distribution in an air-ventilated snow layer.
Yen, Y.-C., *U.S. Army Cold Regions Research and Engineering Laboratory,* Mar. 1982, CR 82-05, 10p., ADA-115 598, 9 refs.
Snow temperature, Heat transfer, Mass transfer, Temperature gradients, Flow rate, Temperature distribution, Diurnal variations, Analysis (mathematics).
The problem of simultaneous heat and mass transfer in a homogeneous snow layer, with one side kept at its initial temperature and the other side with a step temperature increase, was solved for the case of constant through-flow conditions. An experimentally determined effective thermal conductivity function, i.e. $Ke = 0.0014 + 0.58\ G$ (where G is dry mass flow rate of air in g/cm2s), was employed in the solution. The computed non-dimensional temperature distribution agreed quite well with experimental data taken under pseudo-steady state conditions with the exception of the temperature for the lowest flow rate used in the experiment. The pronounced nonlinearity of the temperature distribution was found to be a strong function of the flow rate. For sinusoidal variation of atmospheric pressure, the responding flow in the snow medium was also found to be sinusoidal. In conjunction with the diurnal temperature change, this variation facilitated the process of repeated sublimation and condensation in alternate directions and thereby produced a surface layer of approximately constant snow density.

39-1264
Shoreline conditions and bank recession along the U.S. shorelines of the St. Marys, St. Clair, Detroit and St. Lawrence rivers.
Gatto, L.W., *U.S. Army Cold Regions Research and Engineering Laboratory,* May 1982, CR 82-11, 75p., ADA-116 398, 31 refs.
Banks (waterways), Erosion, Shoreline modification, Rivers, Ice navigation, Photointerpretation, Soil erosion, Sliding, Charts, Aerial surveys, Seasonal variations.
The purpose of this investigation was to provide data to be used in evaluating the effects of winter navigation on processes that cause bank erosion. The specific objectives were to document bank conditions and erosion sites along the rivers, to monitor and compare the amounts of winter and summer bank recession and change, and to estimate the amount of recession that occurred prior to winter navigation. Shoreline conditions and bank recession were documented during field surveys each spring and fall. Bank changes were evaluated by comparison to observations from a previous survey. Aerial photointerpretation was done to estimate the amount of bank recession that occurred prior to winter navigation. Three hundred forty-five miles of river shoreline were surveyed. Banks were eroding along 21.5 miles (6.2%). The common types of bank failures were soil falls (sloughing) and block sliding and slumping. The erosion along approximately 15 miles (70%) of the 21.5 miles was occurring along reaches not bordering winter navigation channels.

39-1265
Sensible and latent heat fluxes and humidity profiles following a step change in surface moisture.
Andreas, E.L., *U.S. Army Cold Regions Research and Engineering Laboratory,* Apr. 1982, CR 82-12, 18p., ADA-115 596, 42 refs.
Heat flux, Latent heat, Surface properties, Analysis (mathematics), Humidity, Boundary layer, Friction, Wind factors.
From a high-quality set of velocity, temperature, and humidity profiles collected upwind and downwind of a step change in surface roughness, temperature, and moisture, upwind and downwind values of the heat fluxes and friction velocity are calculated.

39-1266
Numerical solutions for a rigid-ice model of secondary frost heave.
O'Neill, K., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Apr. 1982, CR 82-13, 11p., ADA-115 597, For another version see 36-54. 11 refs.
Miller, R.D.
Frost heave, Soil freezing, Ice models, Regelation, Ice formation, Grounded ice, Heat transfer, Mass transfer, Thermodynamics, Analysis (mathematics).
In this paper, frost heave is analyzed for the common case in which some ice penetrates the soil. In this situation, heave is due to the accumulation of soil-free ice just within the frozen zone, behind a frozen fringe of finite thickness. Heat and mass transport within and across that fringe are crucial processes in the dynamics of heave. This analysis concentrates on activity within the fringe, also connecting that activity to heat and mass flows in the more frozen and unfrozen zones. Each component in a set of governing differential equations is developed from rational physics and thermodynamics, using previous experimental work. It is assumed that the soil ice grows through interconnected interstices; hence it constitutes and can move as

a rigid body. When this assumption is translated into mathematical terms, it completes the governing equations. The model resulting from these considerations is a one-dimensional finite element computer program that solves the equations for arbitrary initial and boundary conditions. The model is used to simulate the heave history of a hypothetical soil column frozen unidirectionally and subjected to a surcharge. The results are gratifying in that they predict qualitatively the characteristics of numerous laboratory observations. Some questions about the completeness of the theory remain, and strict verification of the model awaits further experimentation and better parameter identification.

39-1267

Comparative analysis of the USSR construction codes and the US Army technical manual for design of foundations on permafrost.

Fish, A.M., *U.S. Army Cold Regions Research and Engineering Laboratory,* May 1982, CR 82-14, 20p., ADA-116 234, 27 refs.

Permafrost beneath structures, Frozen ground settling, Cold weather construction, Foundations, Piles, Design criteria, Building codes, Frozen ground strength, Safety, USSR.

A comparative study was made of design criteria and analytical methods for footings and pile foundations on permafrost employed in U.S.S.R. Design Code SNiP 11-18-76 (1977) and U.S. Army Cold Regions Research and Engineering Laboratory Special Report 80-34 developed in the early 1970's by the U.S. Army Corps of Engineers and published in 1980. The absence of adequate constitutive equations for frozen soils and of rigorous solutions of the boundary problems has made it necessary to incorporate (explicitly or implicitly) various safety factors in the foundation analyses. From the review it is concluded that the principal difference between these practices is in the assessment and application of appropriate values of safety factors, which leads to a substantial discrepancy in the dimensions and cost of footings and pile foundations in permafrost.

39-1268

Application of a numerical sea ice model to the East Greenland area.

Tucker, W.B., *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1982, CR 82-16, 40p., ADA-120 659, For another version see 36-3254. 37 refs.

Ice models, Drift, Sea ice, Thermodynamics, Ice strength, Mathematical models, Ice cover thickness, Ice growth, Velocity, Heat flux, Ocean currents, Wind factors, Greenland.

A dynamic-thermodynamic sea ice model which employs a viscous-plastic constitutive law has been applied to the East Greenland area. The model is run on a 40-km spatial scale at 1/4-day time steps for a 60-day period with forcing data beginning on 1 October 1979. Results tend to verify that the model predicts reasonable thicknesses and velocities within the ice margin. Thermodynamic ice growth produces excessive ice extent, however, probably due to inadequate parameterization of oceanic heat flux. Ice velocities near the free ice edge are also not well simulated, and preliminary investigations attribute this to an improper wind field in this area. A simulation which neglects ice strength, effectively damping ice interaction with itself and allowing no resistance to deformation, produces excessive ice drift toward the coast and results in unrealistic nearshore thicknesses. A dynamics-only simulation produced reasonable results, including a more realistic ice extent, but the need for proper thermodynamics is also apparent. Other simulations verify that ice import from the Arctic Basin, and ice transport due to winds and currents, were also important components in the model studies.

39-1269

Seismic site characterization techniques applied to the NATO RSG-11 test site in Münster Nord, Federal Republic of Germany.

Albert, D.G., *U.S. Army Cold Regions Research and Engineering Laboratory,* July 1982, CR 82-17, 33p., ADA-119 390, 15 refs.

Seismic refraction, Geologic structures, Wave propagation, Seismology, Velocity.

Seismic P and SH wave refraction experiments at the NATO RSG-11 test site in Münster Nord, Federal Republic of Germany, reveal the presence of a nearly horizontal, three-layer velocity structure. The upper layer, composed of unconsolidated glacial till, is 1 m thick and has P (compressional) and SH (shear horizontal) wave velocities of 240 and 165 m/s. The second layer, made up of similar, more compacted material, is 9.5 m thick, with a P wave velocity of 470 m/s and an SH wave velocity of 275 m/s. The third layer, interpreted as the groundwater table, is located at a depth of 10.5 m and has a P wave velocity of 1590 m/s. The SH wave velocity of this layer is controlled by the matrix material and is the same as that of the second layer. A single, unreversed observation indicated a fourth layer at a depth of about 20 m, but the existence of this layer remains unconfirmed. The observed fundamental mode Love wave dispersion is in agreement with the theoretical dispersion predicted by the refraction velocities. Computed partial derivatives of phase velocity with respect to shear wave velocity show, for the frequencies observed, that the dispersion confirms the thicknesses and velocities of the two upper layers and is not affected by the deeper structure.

39-1270

Optimizing deicing chemical application rates.

Minsk, L.D., *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1982, CR 82-18, 55p., ADA-119 681, 8 refs.

Chemical ice prevention, Ice control, Salting, Road icing, Snow removal, Ice removal, Safety, Friction, Trafficability.

Snow and ice control on highways has come to rely heavily on the sodium chloride to maintain a trafficable surface for unimpeded movement. Empirical approaches have led to a wide range of application rates, some clearly excessive, but justified on the ground of safety and expediency. The combination of environmental degradation from the huge quantities of salt entering the environment, along with the increased cost of salt itself and the cost of its application have spurred the search for more precise knowledge of the proper amount of salt to apply to a pavement, considering a range of environmental, traffic and chemical parameters. Since controlled tests in the field are extremely difficult to make, a circular test track of three test pavements, dense-graded asphaltic concrete (DGA), open-graded asphaltic concrete (OGA) and portland cement concrete (PCC), was constructed in a coldroom. Natural snow and ice were applied to the pavements and an instrumented slipping wheel was driven over the surfaces to generate frictional forces. These forces were measured and then used to evaluate the response to salt application with time for three test temperatures. OGA had the lowest friction values at a temperature near the freezing point, but higher initial values or more rapidly increasing values than DGA and PCC following salt application at the two lower temperatures. Optimum application rate of salt on PCC and DGA lies between 100 and 300 lb/lane mile (LM), and a higher rate resulted in slight or no improvement in friction. DGA showed anomalous results, lower friction for 300 lb/LM and higher friction for both 100 and 500 lb/LM.

39-1271

Deceleration of projectiles in snow.

Albert, D.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1982, CR 82-20, 29p., ADA-119 676, 11 refs.

Richmond, P.W., III.

Snow density, Penetration tests, Projectile penetration, Military research, Velocity, Impact strength.

Instrumented M374 projectiles were launched into snow, nylon, and Styrofoam targets using a 10.7-m radius centrifuge. For snow of 410-kg/cu m density, the 3.1-kg test projectile experienced decelerations of approximately 220, 400, and 550 m/s/s (at a depth of 0.3 m) for initial impact velocities of 15, 30 and 46 m/s respectively. These values disagree with values predicted from a simple hydrodynamic drag force approximation. The decelerations measured for snow targets were always greater than those measured for nylon shaving targets (of density 120 kg/cu m) indicating that this material is not a good analog for snow of the density used in these tests.

39-1272

Direct filtration of streamborne glacial silt.

Ross, M.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Sep. 1982, CR 82-23, 17p., ADA-120 751, 8 refs.

Lowman, R.A., Sletten, R.S.

Sediments, Glacial deposits, Glacial rivers, Water treatment, Geological surveys, Equipment.

A direct filtration, water treatment pilot plant was operated on the Kenai River at Soldotna, Alaska, during the summer of 1980. The purpose of the pilot plant operations was to determine the feasibility of the direct filtration process for removal of glacial silt. The major criterion used to determine feasibility was production of water containing less than 10 NTU of turbidity. For the range of raw water turbidities encountered (22-34 NTU), the pilot plant testing indicated that direct filtration was feasible and could be considered as an alternative to conventional water treatment plants containing sedimentation tanks.

39-1273

Bering Strait sea ice and the Fairway Rock icefoot.

Kovacs, A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Oct. 1982, CR 82-31, 40p., ADA-122 477, 45 refs.

Sodhi, D.S., Cox, G.F.N.

Ice conditions, Sea ice, Pressure ridges, Ice pressure, Ice formation, Offshore landforms, Ice loads, Grounded ice, Aerial surveys, Bering Strait.

Information on sea ice conditions in the Bering Strait and the icefoot formation around Fairway Rock, located in the strait, is presented. Cross sectional profiles of Fairway Rock and the relief of the icefoot are given along with theoretical analyses of the possible forces active during icefoot formation. It is shown that the ice cover most likely fails in flexure as opposed to crushing or buckling, as the former requires less force. Field observations reveal that the Fairway Rock icefoot is massive with ridges up to 15 m high, a seaward face only 20 deg from vertical, and interior ridge slopes averaging 33 deg. The icefoot is believed to be grounded and its width ranges from less than 10 to over 100 m.

39-1274

Landsat-assisted environmental mapping in the Arctic National Wildlife Refuge, Alaska.

Walker, D.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Nov. 1982, CR 82-37, 59p. + 2 maps, ADA-123 440, Refs. p.34-37.

Acevedo, W., Everett, K.R., Gaydos, L., Brown, J., Webber, P.J.

Tundra, Mapping, Remote sensing, Geobotanical interpretation, Environments, Soils, Patterned ground, Vegetation, Classifications, LANDSAT, United States—Alaska—Arctic National Wildlife Refuge.

This report presents a Landsat-derived land cover map of the northwest portion of the Arctic National Wildlife Refuge, Alaska. The report is divided into two parts. The first is devoted to the land cover map with detailed descriptions of the mapping methods and legend. The second part is a description of the study area. The classification system used for the maps is an improvement over existing methods of describing tundra vegetation. It is a comprehensive method of nomenclature that consistently applies the same criteria for all vegetation units. It is applicable for large- and small-scale mapping and is suitable for describing vegetation complexes, which are common in the patterned-ground terrain of the Alaskan Arctic. The system is applicable to Landsat-derived land cover classifications. The description of the study area focuses on five primary terrain types: flat thaw-lake plains, hilly coastal plains, foothills, mountainous terrain, and river flood plains. Topography, landforms, soils and vegetation are described for each terrain type. The report also contains area summaries for the Landsat-derived map categories. The area summaries are generated for the five terrain types and for the 89 townships within the study areas. Two land cover maps at 1:250,000 are included.

39-1275

Halos of stones.

Weisburd, S., *Science news,* Jan. 19, 1985, 127(3), p.42-44.

Patterned ground, Freeze thaw cycles, Soil freezing, Ground thawing, Rocks, Sorting.

39-1276

Ecology and paleoecology of the marine diatom *Eucampia antarctica* (Castr.) Mangin.

Burckle, L.H., *Marine micropaleontology,* July 1984, 9(1), p.77-86, Refs. p.85-86.

Algae, Paleobotany, Plant ecology, Floating ice.

The distribution of *Eucampia antarctica*, both in the water column and in the sediments of the southern ocean, is discussed. On the basis of these data, it is concluded that, although this species is widely distributed in the southern ocean, it is most *abundant in a near shore and/or neritic environment.* However, a pseudoneritic environment, provided by floating ice may also provide a suitable substrate for the proliferation of this species. (Auth.)

39-1277

Treatment of numerical oscillations in heat and mass transfer problems with "fronts".

Carey, G.F., et al, Numerical properties and methodologies in heat transfer: Proceedings of the 2nd National Symposium. Edited by T.M. Shih, Washington, DC, Hemisphere Publishing Co., 1983, p.337-346, 10 refs.

Hayes, L.J.

Heat transfer, Mass transfer, Boundary value problems, Stefan problem, Permafrost physics, Thermal conductivity, Convection, Flow measurement, Temperature distribution, Analysis (mathematics).

39-1278

Proceedings. Role of snow and ice in northern basin hydrology.

Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984, 1984, 5 sections, Refs. passim. For individual papers see 39-537 and 39-1279 through 39-1300.

Snow surveys, Snowmelt, Snow hydrology, Glacial hydrology, Remote sensing, Meltwater, Runoff, Flood forecasting, Climatic factors, Snow physics.

39-1279

Wind correction factors for snow precipitation gauges.

Carlsson, B., et al, Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984. Proceedings. Role of snow and ice in northern basin hydrology, 1984, p.1.15-1.30, 7 refs.

Svensson, U.

Snow accumulation, Snowfall, Precipitation gages, Wind factors, Snowflakes, Velocity, Mathematical models.

39-1280

Infrared analysis of free water content of snow.

Lammasniemi, J., et al, Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984. Proceedings. Role of snow and ice in northern basin hydrology, 1984, p.1.31-1.41.

Hyvärinen, T.

Snow water content, Infrared spectroscopy, Snow crystal structure, Snow optics, Scattering, Ice optics.

39-1281
Additional observations on the snow to be considered when skiing.
Palosuo, E., et al, Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984. Proceedings. Role of snow and ice in northern basin hydrology, 1984, p.1.43-1.49, 13 refs.
Spring, E., Pihkala, P., Erkkilä, J.
Snow physics, Snow temperature, Snow surface, Skis, Snow hardness, Snow water content, Surface roughness, Grain size.

39-1282
Hydrological measuring and data transmission in Greenland.
Thomsen, T., Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984. Proceedings. Role of snow and ice in northern basin hydrology, 1984, p.1.51-1.69.
Hydrology, Remote sensing, Data transmission, Precipitation (meteorology), Climatic factors, Electric power, Ice dams, Water level, Wind factors, Greenland.

39-1283
Snow stick, a new device for monitoring snow depth.
Östrem, G., Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984. Proceedings. Role of snow and ice in northern basin hydrology, 1984, p.1.71-1.78.
Snow depth, Remote sensing, Measuring instruments, Data transmission, Hydrology, Meltwater, Mountains, Lakes, Glacier mass balance, Norway.

39-1284
Some experience of the gamma-ray snow survey method after ten years of operational use.
Andersen, T., et al, Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984. Proceedings. Role of snow and ice in northern basin hydrology, 1984, p.2.1-2.13, 5 refs.
Johnsrud, M.
Snow surveys, Gamma irradiation, Snow water equivalent, Snow cover distribution, Snow accumulation, Attenuation, Mountains, Accuracy, Norway.

39-1285
Studies of microwave remote sensing of snow.
Hallikainen, M., et al, Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984. Proceedings. Role of snow and ice in northern basin hydrology, 1984, p.2.15-2.26, 7 refs.
Tiuri, M.
Snow surveys, Microwaves, Remote sensing, Snow water equivalent, Radiometry, Thermal radiation, Snow depth.

39-1286
Modeling unsteady flow in an ice covered river.
Forsius, J., Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984. Proceedings. Role of snow and ice in northern basin hydrology, 1984, p.3.1-3.10, 3 refs.
River flow, Icebound rivers, Ice cover effect, Unsteady flow, Mathematical models, Friction, Water level, Ice cover thickness.

39-1287
Graphical ice reduction.
Hyvärinen, V., Northern Research Basins Symposium, 5th, Vierumäki, Finland, Mar. 19-23, 1984. Proceedings. Role of snow and ice in northern basin hydrology, 1984, p.3.11-3.14, 5 refs.
Ice breakup, Freezing, Ice cover effect, Channels (waterways), Ice mechanics, Variations, Winter.

39-1288
Observations of ice thickness in daily regulated rivers.
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39-1345
Using collar beams when fixing one-column reinforced concrete supports. [Zadelka odnostoechnoĭ zhelezobetonnoĭ opory s pomoshch'iu balochnogo rigeliia],
Budanov, V.G., *Energeticheskoe stroitel'stvo*, Oct. 1984, No.10, p.38-39, In Russian. 4 refs.
Concrete piles, Reinforced concretes, Foundations, Swamps, Peat, Bearing strength, Design.

39-1346
Equipment for building broad-base built-in-situ piles in water saturated ground. [Mekhanizatsiia ustroĭstva nabivnykh svaĭ s ushireniem piatoĭ v vodonasyshchennykh gruntakh],
Khatchenko, V.V., et al, *Mekhanizatsiia stroitel'stva*, Nov. 1984, No.11, p.11-12, In Russian. 2 refs.
Piles, Swamps, Paludification, Drilling, Pile structures, Foundations, Organic soils, Construction equipment, Peat.

39-1347
New construction equipment for land reclamation works. [Novaia tekhnika dlia meliorativnogo stroitel'stva],
Meshkov, V.M., *Mekhanizatsiia stroitel'stva*, Nov. 1984, No.11, p.24-27, In Russian.
Swamps, Drains, Earthwork, Land reclamation, Construction equipment, Drainage.

39-1348
Impact of snowmelt-runoff from agricultural watersheds on dissolved oxygen.
Sullivan, J.F., *Water Pollution Control Federation. Journal*, Feb. 1983, 55(2), p.170-177, 16 refs.
Snowmelt, Runoff, Water pollution, Watersheds, Agriculture, Oxygen, Environmental impact

39-1349
Snow and avalanches in the Swiss Alps, winter 1982/83. [Schnee und Lawinen in den Schweizer Alpen, Winter 1982/83],
Davos, Switzerland. Eidgenössisches Institut für Schnee und Lawinenforschung. Its Winterberichte, No.47, Davos, Switzerland, 1984, 132p., In German
For selected papers see 39-1350 through 39-1352.
Accidents, Snow surveys, Damage, Avalanches, Snowfall, Snow accumulation, Switzerland—Alps.

39-1350
Snow and avalanches in the Davos region. [Schnee und Lawinen in der Region Davos],
Föhn, P., et al, *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte*, 1984, No.47, p.28-39, In German.
Beck, E.
Snow surveys, Avalanche formation, Snowfall, Snow cover stability, Snow temperature, Snow depth, Switzerland—Davos.

39-1351
Snow and avalanche conditions in the Swiss Alps. [Schnee- und Lawinenverhältnisse im schweizerischen Alpengebiet],
Meister, R., et al, *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung Winterberichte*, 1984, No.47, p.40-94, In German.
Gliott, S.
Snow surveys, Snow accumulation, Avalanche formation, Avalanche mechanics, Snowfall, Snow cover distribution, Snow depth, Snow water equivalent, Snow density, Statistical analysis, Switzerland—Alps.

39-1352
Accidents and damage due to avalanches in the Swiss Alps. [Durch Lawinen verursachte Unfälle und Schäden im Gebiet der Schweizer Alpen],
Föhn, P., et al, *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte*, 1984, No.47, p.95-127, In German.
Etter, H.-J.
Avalanches, Accidents, Damage, Impact strength, Snow temperature, Switzerland—Alps.

39-1353
Snow as a factor in salt desert shrub vegetation patterns in Curlew Valley, Utah.
West, N.E., et al, *American midland naturalist*, Apr 1983, 109(2), p.376-379, 9 refs.
Caldwell, M.M.
Vegetation patterns, Snow cover effect, Deserts, Snow composition, Saline soils, Statistical analysis.

39-1354
Physical characteristics of some Indiana argillaceous carbonates regarding their freeze-thaw resistance in concrete.
Shakoor, A., et al, *Association of Engineering Geologists. Bulletin*, Nov. 1982, 19(4), p.371-384, 34 refs.
West, T.R., Scholer, C.F.
Concrete freezing, Concrete durability, Concrete aggregates, Freeze thaw tests, Clay soils, X ray diffraction.

39-1355
XSP cone penetrometer: a performance evaluation.
Beard, R.M., et al, *U.S. Naval Civil Engineering Laboratory, Port Hueneme, CA. Technical report,* Oct. 1984, TR-911, 58p., ADA-148 886, 19 refs.
Johnson, B.A.
Bottom sediment, Ocean bottom, Penetration, Soil strength, Measuring instruments, Hydraulic jets, Bearing strength, Soundings, Settlement (structural), Soil density, Shear strength.

39-1356
Blasting of earth in the construction of main pipelines and underground storages. [Burovzryvnye raboty pri stroitel'stve magistral'nykh truboprovodov i podzemnykh khranilishch],
Globa, V.M., Moscow, Nedra, 1984, 239p., In Russian with English table of contents enclosed. 50 refs.
Boreholes, Embankments, Permafrost physics, Explosives, Underground storage, Permafrost thermal properties, Earthwork, Blasting, Pipelines, Underground facilities.

39-1357
Using the induced polarization technique in locating water-bearing zones in perennially frozen strata. [Vyiavlenie vodonosnykh gorizontov v tolshche mnogoletnemerzlykh otlozhenii metodom vyzvannoi poliarizatsii],
Kolchin, G.I., et al, *Razvedochnaia geofizika,* 1984, Vol.97, p.77-80, In Russian.
Skvortsov, A.F., Chirka, D.V.
Permafrost structure, Electromagnetic prospecting, Permafrost hydrology, Discontinuous permafrost, Frozen fines, Loams, Water supply.

39-1358
Parametrization of seasonal variation of boundaries of polar ice and of continental snow cover, as applied to zonal climatic models. [Parametrizatsiia sezonnykh izmenenii granits morskikh poliarnykh l'dov i kontinental'nogo snezhnogo pokrova primenitel'no k zonal'nym klimaticheskim modeliam],
Beeva, I.M., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1983, Vol.280, p.29-41, In Russian. 27 refs.
Vinnikov, K.IA.
Sea ice distribution, Snow cover distribution, Polar regions, Seasonal variations, Models, Climatology, Arctic Ocean.

39-1359
Attenuation of infrared radiation by ice platelets.
Petrushin, A.G., *Optics and spectroscopy,* Oct. 1979, 47(4), p.403-407, Translated from Optika i spektroskopiia, vol.47, p.728-734. 14 refs.
Infrared radiation, Atmospheric attenuation, Supercooled clouds, Ice fog, Ice crystals, Light scattering.

39-1360
Glacier fluctuations in South Georgia, 1883-1974.
Hayward, R.J.C., *British Antarctic Survey. Bulletin,* Dec. 1983, No.52, p.47-61, 44 refs.
Glacier oscillation, Climatic changes, South Georgia.
South Georgia has been continuously occupied since 1904 by personnel associated with the whaling industry or by members of scientific expeditions. Although these pioneers made no formal glaciological studies, many photographs were taken and some surveying was carried out. Data from archives and from personal collections have been assembled and analysed for evidence of fluctuations in the positions of glacier snouts. Different glacier types show differing responses to climatic change. Of 38 glaciers, for which multiple observations have been made, 13 show no significant change. The remainder have undergone oscillations during the present century which are, however, small compared with changes that have occurred in glaciers in the Northern Hemisphere. A comprehensive list of the sources of all known material on South Georgia glaciers is given in the Appendices. (Auth.)

39-1361
Ice, water and energy balances of Spartan Glacier, Alexander Island.
Jamieson, A.W., et al, *British Antarctic Survey. Bulletin,* Dec. 1983, No.52, p.155-186, 16 refs.
Wager, A.C.
Glacier ice, Glacier mass balance, Ice heat flux, Heat transfer, Measuring instruments, Antarctica—Alexander Island.
Components of the energy balance of Spartan Glacier, Alexander Island, were measured during the period 1973-74. Conditions near the surface were dominated by gravity winds flowing down the glacier. There is no satisfactory theoretical treatment of this situation so estimates of sensible- and latent-heat exchange were necessarily crude. The accepted practice of measuring solar radiation with horizontally mounted radiometers gave misleading results because the glacier was not a diffuse scatterer at short wave-lengths. Approximately 50 per cent of the outgoing radiation was specularly reflected. The problem could be overcome by mounting the solarimeters parallel to the surface. Mass-balance measurements made between 1969 and 1974 showed that the glacier was decreasing by 1 500 of its mass per year, although errors in determining density caused uncertainties. Direct measurements of change of mass would enable the amount of energy used to melt ice to be determined accurately. The amount of sensible and latent heat could then be obtained as the residue of the energy balance. (Auth.)

39-1362
Dynamics of George VI Ice Shelf.
Pearson, M.R., et al, *British Antarctic Survey. Bulletin,* Dec. 1983, No.52, p.205-220, 14 refs.
Rose, L.H.
Ice shelves, Ice bottom surface, Ablation, Ice cover thickness, Ice mechanics, Antarctica—George VI Ice Shelf.
Experiments aimed at understanding the factors which affect mass flux at the bottom surface of an ice shelf have been made. Surface strain-rates were observed together with net balance at a number of points. Flow lines were determined from satellite imagery used together with survey measurements. Ice thicknesses were measured by airborne radio echo sounding. Bottom-flux profiles measured across the direction of flow allowed discrete ice streams within the ice shelf to be detected. In one area, an ice regime analogous to that of a consuming plate boundary in contemporary plate-tectonic theory was found. (Auth.)

39-1363
Glaciological characteristics of Spartan Glacier, Alexander Island.
Wager, A.C., et al, *British Antarctic Survey. Bulletin,* Dec. 1983, No.52, p.221-228, 5 refs.
Jamieson, A.W.
Glacier flow, Ice cover thickness, Glacier mass balance, Antarctica—Alexander Island.
A summary is given of major characteristics of the glacier. These are presented in the form of tables, graphs, and sketches supplemented by text and include: surface elevation, ice thickness, seasonal and stake changes in mass, change in height, and mean meteorological values. A chart locates the glacier, its physical features are listed, and a summary is given of studies made on the glacier and when they were made.

39-1364
Climatic bases of regional urban planning and construction in Siberia. [Klimatologicheskie osnovy raĭonnoĭ planirovki i gradostroitel'stva v Sibiri],
Pivkin, V.M., Leningrad, Strolizdat, 1984, 260p., In Russian with English table of contents enclosed. 182 refs.
Urban planning, Municipal engineering, Roads, Residential buildings, Industrial buildings, Permafrost beneath structures, Microclimatology, Sanitary engineering, Water supply, Waste disposal, Air pollution, Water pollution.

39-1365
Physical conditions of fast ice formation in East Antarctica. *Polar geography,* Jan.-Mar. 1979, 3(1), p.1-15, Refs. p.11-15. Translated from Sovetskaia antarkticheskaia ekspeditsiia. Trudy. Vol. 63, 1977, p.5-16.
DLC G575.P58
Fast ice, Ice formation, Sea ice distribution, Meteorological factors, Ice structure, Snow cover distribution.
Studies of the fast ice formations around Antarctica have assumed increasing importance as the ice is being used as a natural loading and unloading platform for ship borne supplies to antarctic stations. Each year, Soviet expedition ships deliver up to 12,000 tons of cargo to Antarctica, much of which is transported from ship to shore over fast ice. This use of the ice requires thorough knowledge about its bearing strength and the factors that are likely to weaken or break it. This article discusses the general meteorological and hydrologic conditions accounting for fast-ice formation, shoreline morphology and fast-ice distribution, as well as the morphology of the fast ice itself. (Auth.)

39-1366
Bearing strength of fast ice and antarctic transport operations during the spring-summer period. *Polar geography,* Jan.-Mar. 1979, 3(1), p.15-30, Refs. p.28-30. Translated from Sovetskaia antarkticheskaia ekspeditsiia. Trudy. Vol. 63, 1977, p.104-118.
DLC G575.P58
Ice cracks, Ice structure, Ice cover strength, Bearing strength, Moorings, Antarctica—Mirnyy Station, Antarctica—Molodezhnaya Station, Antarctica—Novolazarevskaya Station.
The conditions for ship-to-shore cargo operations over the fast ice at the Soviet antarctic stations are described. The effect of temperature and structural nonhomogeneity of ice on the bearing strength is analyzed, and formulas are derived for computing the minimum thickness of fast ice required for the movement of various types of vehicles.

39-1367
Characteristics of the distribution of total annual precipitation by drainage areas of the Arctic and their variations.
Briazgin, N.N., *Polar geography,* Jan.-Mar.1079, 3(1), p.30-39, Translated from Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy. Vol.327, 1976, p.100-109. 14 refs.
DLC G575.P58
Runoff, Precipitation (meteorology), Distribution, Polar regions, Landscape types, Topographic effects, Drainage, Altitude, Arctic landscapes, Surface properties, Charts, Arctic Ocean.

39-1368
Permafrost in the Yamal-Gydan area of western Siberia.
IUnak, R.I., *Polar geography,* Jan.-Mar. 1979, 3(1), p.49-63, Translated from Yamalo-Gydanskaya oblast' edited by R.K. Sisko, Leningrad, Gidrometeoizdat, 1977, p.123-137.
DLC G575.P58
Active layer, Permafrost distribution, Permafrost thermal properties, Charts, Ground ice, Permafrost thickness, Ice volume, Landscape types, Tundra, Permafrost structure.

39-1369
Unveiling the secrets of the ice continent. [Za razgadkoĭ taĭn Ledianogo kontinenta],
Zotikov, I.A., Moscow, Mysl', 1984, 248p., In Russian with English summary.
Ice sheets, Lake ice, Expeditions, Antarctica—Mirnyy Station, Antarctica—McMurdo Station, Antarctica—Amundsen-Scott Station.
The 460 days spent by the author with the Fourth Soviet Antarctic Expedition, and one year with American scientists at McMurdo and Amundsen-Scott stations, are described in a narrative style. Antarctic phenomena, such as subglacial melting, warm lakes covered by permanent ice, and sea creatures found on glaciers, as well as the daily problems of personnel wintering over in Antarctica, are brought to life with interest and a touch of humor. Color photographs are included.

39-1370
Effect of unconfined loading on the unfrozen water content of Manchester silt.
Oliphant, J.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* June 1983, SR 83-18, 17p., ADA-131 851, 13 refs.
Tice, A.R., Berg, R.
Frozen ground strength, Loads (forces), Unfrozen water content, Soil water, Temperature measurement, Nuclear magnetic resonance, Thermodynamics.
Frozen samples of a Manchester silt having various total water contents were subjected to several surcharge loads, and the unfrozen water content was measured with NMR as the temperature was gradually raised. The surcharge pressure had a greater effect on the unfrozen water content than had been predicted using the Clausius-Clapeyron equation. This effect was explained by considering the loaded samples as nonequilibrium systems in which the surcharge pressures were concentrated in the ice phase.

39-1371
Historical bank recession at selected sites along Corps of Engineers reservoirs.
Gatto, L.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Sep. 1983, SR 83-30, 103p., ADA-138 030, Refs. p.76-79.
Doe, W.W., III.
Soil erosion, Reservoirs, Banks (waterways), Ice cover effect, Freeze thaw cycles, Shoreline modification, Environmental impact, Water waves, Wind factors, Climatic factors.
This analysis was done to improve our understanding of the patterns of reservoir bank recession as a preliminary step in a detailed study of reservoir bank erosion processes and environmental impacts. The specific objectives were to observe and document bank characteristics, conditions and changes along reservoirs with eroding banks, to estimate the amounts of historical bank recession, and to analyze its possible causes. Aerial photographs were used to observe the historical bank changes and to estimate bank recession. Site reconnaissance, discussions with Corps personnel, and published reports were used to evaluate possible relationships between the recession and reservoir bank conditions.

39-1372
Soviet avalanche research. Avalanche bibliography update: 1977-1983.
World Data Center A for Glaciology, *Glaciological data,* Nov. 1984, GD-16, 300p., Refs. passim. For individual papers see 39-1373 through 39-1382.
Avalanches, Snow mechanics, Bibliographies, Avalanche formation, Avalanche forecasting, Avalanche wind, USSR.

39-1373
Criteria of snow avalanche formation.
Bozhinskiĭ, A.N., *Glaciological data,* Nov. 1984, GD-16, p.7-31, For Russian original see 23-5187. 25 refs.
Avalanche formation, Avalanche forecasting, Snow cover stability, Snow strength, Avalanche mechanics, Meteorological factors, Rheology, Analysis (mathematics).

39-1374
Prevention of avalanches with arrangements of snow supporting structures on moutain slopes.
Bozhinskiĭ, A.N., *Glaciological data,* Nov. 1984, GD-16, p.33-51, For Russian original see 29-3845. 9 refs.
Avalanche mechanics, Avalanche forecasting, Structures, Snow fences, Countermeasures, Analysis (mathematics), Mountains, Slope orientation, Snow depth.

39-1375
Sliding of a snow slab past a retaining structure.
Bozhinskiĭ, A.N., *Glaciological data,* Nov. 1984, GD-16, p.53-62, For Russian original see 31-4190. 4 refs.
Avalanche mechanics, Snow slides, Velocity, Slope orientation, Analysis (mathematics).

39-1376
Theoretical approaches to avalanche dynamics.
Eglit, M.E., *Glaciological data,* Nov. 1984, GD-16, p.63-116, For Russian original see 23-5188. 14 refs.
Avalanche mechanics, Slope orientation, Snow mechanics, Mathematical models, Theories, Snow density.

39-1377
Investigation of the solutions to snow avalanche movement equations.
Bakhvalov, N.S., et al, *Glaciological data,* Nov. 1984, GD-16, p.117-128, For Russian original see 36-1215. 4 refs.
Eglit, M.E.
Avalanche mechanics, Mathematical models, Slope orientation, Snow mechanics.

39-1378
Mechanism of the interaction of a moving snow mass with a fixed obstacle.
Shurova, I.E., *Glaciological data,* Nov. 1984, GD-16, p.129-152, For Russian original see 23-5189. 10 refs.
Avalanche mechanics, Snow mechanics, Structures, Impact strength, Mathematical models, Snow density, Velocity, Slope orientation.

39-1379
Nature of an air wave caused by a snow avalanche.
[Akimov, IU.L., et al, *Glaciological data,* Nov. 1984, GD-16, p.153-157, For Russian original see 24-35. 4 refs.
Shurova, I.E.
Avalanche mechanics, Avalanche wind, Snow mechanics, Snow strength, Avalanche tracks, Slope orientation.

39-1380
Determining snow avalanche load on a structure by physical modeling.
[Akimov, IU.L., et al, *Glaciological data,* Nov. 1984, GD-16, p.159-164, For Russian original see 30-1228. 5 refs.
Shurova, I.E.
Avalanche mechanics, Snow loads, Structures, Snow models, Loads (forces), Design, Protection, Dynamic loads.

39-1381
Soviet avalanche model—exegesis and reformulation.
Plam, M., et al, *Glaciological data,* Nov. 1984, GD-16, p.165-196, 9 refs.
Radok, U., Taylor, K.
Avalanche mechanics, Mathematical models, Dynamic loads, Slope orientation.

39-1382
Avalanche bibliography update: 1977-1983.
World Data Center A for Glaciology, *Glaciological data,* Nov. 1984, GD-16, p.197-300.
Avalanche mechanics, Bibliographies, Avalanche engineering, Avalanche erosion, Avalanche formation, Accidents, Damage, Countermeasures, Avalanche forecasting, Statistical analysis.

39-1383
API bulletin on planning, designing, and constructing fixed offshore structures in ice environments.
American Petroleum Institute, Jan. 1982, 49p., Bul 2N, Refs. p.46-49.
Piles, Offshore drilling, Sea ice distribution, Ice loads, Offshore structures, Towers, Artificial islands, Earth fills, Gravel, Rock fills, Ice (construction material), Steel structures, Concrete structures, Foundations, Winter maintenance.

39-1384
API recommended practice for planning, designing, and constructing fixed offshore platforms.
American Petroleum Institute, Dallas, Oct. 1984, 115p., API RP 2A, 15th edition. 56 refs.
Piles, Steel structures, Prefabrication, Offshore structures, Welding, Offshore drilling, Site surveys, Ice loads, Foundations, Ocean waves, Construction materials.

39-1385
Ice surveying. [Vperedi—ledovaia razvedka],
Strugatskiĭ, V., Leningrad, Gidrometeoizdat, 1984, 128p., In Russian with English table of contents enclosed.
Ice surveys, Aerial surveys, Sea ice distribution, Ice navigation, Airplanes, Icebreakers, Ice breaking, Northern Sea Route, Arctic Ocean.

39-1386
Studying and mapping environmental effects of human activities in different regions of the USSR from satellite photographs. [Izuchenie i kartografirovanie antropogennogo vozdeĭstviia na prirodu v razlichnykh raĭonakh SSSR po kosmicheskim snimkam],
Kontoboĭtseva, I.S., et al, *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* Nov.-Dec. 1984, No.6, p.11-18, In Russian. 5 refs.
Kravtsova, V.I.
Human factors, Environmental impact, Spaceborne photography, Photointerpretation, Taiga, Landscape types, Cryogenic soils, Forestry, Grazing, Agriculture, Environmental protection.

39-1387
Snow cover in the central economic region. [Snezhnyĭ pokrov v tsentral'nom ekonomicheskom raĭone],
Miachkova, N.A., et al, Moscow. Universitet. Vestnik. Seriia 5 Geografiia, Nov.-Dec. 1984, No.6, p.55-59, In Russian. 1 ref.
Sorokina, V.N., Sukhorukova, L.I.
Snow cover distribution, Snow depth, Snow density, Snow water equivalent, Meteorological data, Meteorological charts, USSR—Moscow.

39-1388
Peculiarities of mudflow distribution in the Himalayas. [Osobennosti rasprostraneniia selevykh iavleniĭ v Gimalaiakh],
Sen'kovskaia, N.F., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* Nov.-Dec. 1984, No.6, p.81-87, In Russian. 14 refs.
Slope processes, Mudflows, Soil erosion, Spaceborne photography, Photointerpretation, Mapping, Snow cover distribution, Snow line, Avalanches, Alpine landscapes, Glacial lakes.

39-1389
Environmental protection around nuclear facilities. [Okhrana okruzhaiushcheĭ sredy na predpriiatiiakh atomnoĭ promyshlennosti],
Shiriaev, F.Z., et al, Moscow, Energoizdat, 1982, 201p., In Russian with abridged English table of contents enclosed. 63 refs.
Nuclear power, Radioactive wastes, Environmental protection, Pollution, Waste disposal, Swamps, Air pollution, Drainage, Water pollution, Soil pollution, Land reclamation, Peat, Cryogenic soils, Soil erosion, Industrial buildings, Permafrost beneath structures, Decontamination.

39-1390
Manual for Military Topography, USSR. Ministry of Defense, Moscow. [Spravochnik po voennoĭ topografii. Ministerstvo oborony SSSR],
Govorukhin, A.M., et al, Moscow, Voenizdat ministerstva oborony SSSR, 1980, 352p., 2nd revised edition. In Russian with abridged English table of contents enclosed.
Kurpin, A.M., Kovalenko, A.N., Gamezo, M.V.
DLC UG470.S763 1980
Stereoscopy, Topographic surveys, Measurement, Topographic maps, Mapping, Terminology, Aerial surveys, Photointerpretation.

39-1391
Matrix partitioning and EOF principal component analysis of antarctic sea ice brightness temperatures.
Murray, C.W., Jr., et al, *U.S. National Aeronautics and Space Administration. Technical memorandum,* Apr. 1984, NASA-TM-83916, 89p., N84-27319, Refs. p.39-46.
Mueller, J.L., Zwally, H.J.
Sea ice, Brightness, Ice temperature, Antarctica—Weddell Sea.
A matrix partitioning scheme is presented for approximating EOF's or eigenvectors of a large sample covariance matrix. The data array, field of measured anomalies of some physical variable relative to their time averages, is partitioned in either the space domain or the time domain. The accuracy and efficiency of the method are demonstrated by applying the technique to the space-time distribution of Nimbus-5 ESMR sea ice brightness temperature measurements in the Weddell Sea and for the time period extending from September 30, 1973, through May 25, 1975. From analysis of the spatial EOF's and their coefficients maximum and minimum ice extents and the times of these extents can be identified. Regions and periods of ice growth and decay are identified as well as regions and periods of higher changes in growth and decay. The interannual variability in the Weddell Polynya between 1973 and 1974 is exhibited by the fourth EOF and its principal component. Power spectral analysis of the principal components reveal periods which can be related to the seasonal cycle of sea ice growth and decay in the Weddell Sea. (Auth.)

39-1392
Projecting future sea level rise. Methodology, estimates to the year 2100, and research needs.
Hoffman, J.S., et al, Washington, U.S. Environmental Protection Agency, Oct. 1983, 121p., EPA 230-09-007, 2nd revised edition. Numerous references.
Keyes, D., Titus, J.G.
Climatic changes, Ice melting, Air pollution, Sea level, Snow cover distribution, Sea ice distribution.
It is reported that concentrations of greenhouse gases will almost certainly double in the next century. The possibility of deglaciation as a source of land-to-sea transfer of snow and ice is discussed. The vulnerability of the West Antarctic ice sheet to such deglaciation is pointed out. Methods to estimate the potential contributions of ice and snow to sea level are presented. Numerous tables, including the distribution of ice and snow on land and sea in both hemispheres, estimates of global sea level rise and the categories of decisions such a rise will influence, are shown. Research needed to improve understanding of snow and ice melting, oceanic warming around Antarctica, and glacial ice discharge, is outlined.

39-1393
Equivalent radar reflectivity factors for snow and ice particles.
Smith, P.L., *Journal of climate and applied meteorology,* Aug. 1984, 23(8), p.1258-1260, 10 refs.
Radar echoes, Reflectivity, Snowflakes, Ice crystals.

39-1394
Exchange processes in biogeocenoses. Reports presented at the second annual meeting commemorating academician V.N. Sukachev, Moscow, Oct. 19, 1983. [Obmennye protsessy v biogeotsenozakh. Doklady na vtorom ezhegodnom chtenii pamiati akademika V.N. Sukacheva, 19 oktiabria 1983 g.],
Giliarov, M.S., ed, Moscow, Nauka, 1984, 85p., In Russian. For selected paper see 39-1395. Refs. p.29-32.
Swamps, Litter, Soil formation, Nutrient cycle, Solar radiation, Decomposition, Soil chemistry, Soil microbiology, Taiga, Heat flux, Landscape types, Cryogenic soils, Hydrothermal processes, Plant ecology, Mass transfer.

39-1395
Flows of material and energy in swamp biogeocenoses. [Potoki veshchestva i energii v bolotnykh biogeotsenozakh].
P'iavchenko, N.I., Obmennye protsessy v biogeotsenozakh. Doklady na vtorom ezhegodnom chtenii pamiati akademika V.N. Sukacheva, 19 oktiabria 1983 g. (Exchange processes in biogeocenoses. Reports presented at the second annual meeting commemorating academician V.N. Sukachev, Moscow, Oct. 19, 1983) edited by M.S. Giliarov, Moscow, Nauka, 1984, p.5-32, In Russian. Refs. p.29-32.
Swamps, Soil formation, Soil chemistry, Nutrient cycle, Solar radiation, Soil microbiology, Heat flux, Plant ecology, Landscape types, Cryogenic soils, Hydrothermal processes, Taiga, Mass transfer.

39-1396
Biogenic accumulation of nitrogen in plants of tundra zone (exemplified by the ecosystems of Bol'shezemel'skaya tundra). [Biogennaia akkumuliatsiia azota rasteniiami tundrovoi zony (na primere ekosistem Bol'shezemel'skoi tundry)],
Grunina, L.K., et al, Akademiia nauk SSSR. Komi filial. Seriia preprintov "Nauchnye doklady", No.97, Syktyvkar, 1984, 32p., In Russian with English table of contents enclosed. 52 refs.
Getsen, M.V.
Tundra, Cryogenic soils, Plant physiology, Mosses, Lichens, Grasses, Trees (plants), Nutrient cycle, Biomass, Plant ecology, Landscape types.

39-1397
Cryogenic structure of Quaternary deposits in the Lena-Aldan basin. [Kriogennoe stroenie chetvertichnykh otlozhenii Leno-Aldanskoi vpadiny],
Ivanov, M.S., Novosibirsk, Nauka, 1984, 125p., In Russian with English table of contents enclosed. Refs. p.115-124.
Permafrost distribution, Permafrost structure, Mapping, Permafrost thickness, Permafrost thermal properties, Ground ice, Ice structure, Thermokarst, Permafrost hydrology, Plains, Human factors, USSR—Yakutia.

39-1398
On the proton field gradient of ice Ih.
Davidson, E.R., et al, *Chemical physics letters*, Oct. 26, 1984, 111(1,2), p.7-10, 17 refs.
Morokuma, K.
Ice crystal structure, Protons, Hydrogen bonds, Molecular structure, Electric fields, Oxygen, Temperature effects.

39-1399
Alaska's snow.
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Arctic haze.
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Haze, Air pollution, Climatic factors, Composition, Electron microscopy, Seasonal variations.

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Snow mechanics, Snow surface, Meteorological factors, Snowrollers.

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Ice breaking, Explosion effects, Impact tests, Loads (forces), Computerized simulation, Dynamic loads, Stresses, Ice water interface.

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Waste treatment, Water treatment, Sludges, Liming.

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Liquids, Freezing, Electron microscopy, Surfactants, Microstructure, Ice crystal structure.

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Solar radiative impacts of graphitic carbon (soot) in aerosols, clouds and snow.
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Snow crystals, Snow composition, Air pollution, Aerosols, Cloud droplets, Solar radiation, Impurities, Models, Albedo, Reflectivity, Soot.

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Merlivat, L.
Snow crystal growth, Isotope analysis, Oxygen isotopes, Temperature effects, Supersaturation, Water vapor, Ice physics.
The classical Rayleigh model assuming isotopic equilibrium fails to explain the deuterium and oxygen 18 contents of polar snow. This model leads to too high temperature-isotope gradients to too low D/O-18 slopes, and consequently to an excessively large range of deuterium excess values. A new model is proposed that takes into account the existence of an isotopic kinetic effect at snow formation as a result of the fact that vapor deposition occurs in an environment supersaturated over ice. This kinetic effect is thoroughly discussed from a mictophysical point of view and tested against experimental data and field observations made in East Antarctic during the 1972-1973 IAGP traverse. This new formulation reconciles predicted and observed values both for the temperature-isotope and D-D/O-18 relationships for reasonable values of supersaturation over ice.

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Kin, A.A., ed.
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Naleds, Railroads, Ice roads, Permafrost beneath structures, Culverts, Snow roads, Transportation, Tunnels, Construction equipment, Bridges, Helicopters, Railroad tracks, Permafrost hydrology, Embankments, Motor vehicles.

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Railroads, Permafrost beneath structures, Railroad tracks, Alpine landscapes, Embankments, Cold weather operation, Cold weather construction, Cost analysis.

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Taiga, Paludification, Soil temperature, Forestry, Forest soils, Plant ecology, Mosses, Frost penetration, Lichens, Snow cover distribution, Grasses, Snow depth, Landscape types, Research projects, Snow density, Experimentation.

39-1413
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Taiga, Plant ecology, Frost penetration, Mosses, Forestry, Lichens, Snow cover distribution, Soil temperature, Snow depth, Snow density, Research projects, Experimentation.

39-1414
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Taiga, Forest soils, Forestry, Frost penetration, Paludification, Research projects, Experimentation, Soil temperature, Plant ecology, Mosses, Grasses, Ecosystems, Landscape types.

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39-1416
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River basins, Permafrost beneath rivers, Permafrost hydrology, Snow water equivalent, Floods, Runoff.

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Reservoirs, Freeze thaw cycles, Shoreline modification, Bottom sediment, Permafrost beneath lakes, Shore erosion, Ground ice, Rivers, Thermal effects, Slope processes, Lakes.

39-1418
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Permafrost beneath rivers, Flow control, Reservoirs, Ice conditions, Environmental impact, River basins, Permafrost distribution.

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River basins, Frost penetration, Permafrost thickness, Permafrost distribution, Frozen fines, Sands, Soil temperature, Slope orientation, Gravel, Landscape types, Soil air interface, Heat transfer, Vegetation factors, Radiation balance.

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Sea ice, Antarctica.
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Carbon dioxide, Carbon isotopes, Gas inclusions, Ice cores.
Air is extracted from bubbles of polar ice samples by a dry extraction method, and the C-13/C-12 ratio is measured on CO2 separated from the air. Ice samples of typically 700 g are crushed at ca. -20C, the evolving air is trapped cryogenically, and CO2 is frozen out from this air for mass-spectrometric isotope analysis. First delta C-13 and delta O-18 results of CO2 from Antarctic ice cores are presented, and delta C-13 is discussed in relation to atmospheric CO2 variations. Delta C-13 of 400 to 800 year old ice is ca. 1.1 per mille higher than the 1980 atmospheric value, which agrees well with model-based estimations. The measurement of three ca. 50,000 year old samples yielded astonishingly low values, but contamination cannot be excluded. (Auth.)

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Cold weather construction, Bibliographies, Computer programs.

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39-1426
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Plant ecology, Soil pollution, Mosses, Environmental impact, Taiga, Ecosystems, Economic development, Cryogenic soils, Landscape types.

39-1427
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Snow composition, Plant physiology, Radioactive wastes, Fallout, Soil pollution, Air pollution, Plant ecology, Snow cover distribution.

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Degradation, Petroleum industry, Environmental impact, Air pollution, Soil pollution, Cryogenic soils, Taiga.

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Peat, Swamps, Environmental protection, Economic *development*, Forest land, Paludification, Soil pollution, Organic soils, Plant ecology.

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39-1438
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Loess, Wettability, Settlement (structural), Porosity, Water content, Clay soils, Soil compaction.

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39-1440
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39-1447
Corrosion of carbon steel weldments in permafrost.
King, R.J., Calgary, Canada, University, 1983, n.p., Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Dec. 1983, p.1928. Microfiche from the National Library of Canada at Ottawa.
Corrosion, Steels, Permafrost beneath structures, Welding, Pipelines, Low temperature tests, Soil water, Water chemistry, Thermodynamics.

39-1448
Embrittlement of welds.
Solomon, H.D., Treatise on materials science and technology, Vol.25, Embrittlement of engineering alloys. Edited by C.L. Briant and S.K. Banerji, New York, Academic Press, 1983, p.525-599, Refs. p.593-599.
Steels, Temperature effects, Brittleness, Cracking (fracturing), Welding, Cold stress, Microstructure, Cooling, Countermeasures.

39-1449
Hydroclimatic conditions of the Amur River region. [Gidroklimaticheskie resursy Amurskoi oblasti].
Nanrasnikov, A.T., et al, Blagoveshchensk, Khabarovskoe knizhnoe izd-vo, 1983, 68p. + 15 maps, In Russian with English table of contents enclosed. 43 refs.
Climatology, Atmospheric circulation, Humidity, Hydrology, Snow cover distribution, Snow water equivalent, Snow depth, Avalanches.

39-1450
Permafrost and hydrogeological conditions of eastern Siberia. [Merzlotno-gidrogeologicheskie usloviia Vostochnoi Sibiri].
Shepelev, V.V., et al, Novosibirsk, Nauka, 1984, 191p., In Russian with English table of contents enclosed. Refs. p.184-190.
Hydrogeology, Permafrost distribution, Permafrost hydrology, Water reserves, Artesian water, Permafrost structure, Mapping, Geologic structures, Suprapermafrost ground water, Subpermafrost ground water.

39-1451
Comparative planetology, Section S.19. Proceedings, Vol.19. [Sravnitel'naia planetologiia, Sektsiia S.19, Doklady, Tom 19].
International Geological Congress, 27th, Moscow, Aug. 4-14, 1984, Moscow, Nauka, 1984, 142p., In Russian. For selected papers see 39-1452 and 39-1453. Refs. passim.
Markov, M.S., ed.
Thermokarst, Mars (planet), Permafrost origin, Extraterrestrial ice, Topographic features, Meltwater, Polar regions, Water erosion, Permafrost distribution, Geocryology, Ground water.

39-1452
Fluvial history of the planet Mars. [Fliuvial'naia istoriia Marsa].
Karr, M.H., Mezhdunarodnyi geologicheskii kongress, 27th, Moscow, Aug. 4-14, 1984. Sravnitel'naia planetologiia, Sektsiia S.19, Doklady, Tom 19 (International Geological Congress, 27th, Moscow, Aug. 4-14, 1984. Comparative Planetology, Section S.19. Proceedings, Vol.19) edited by M.S. Markov, Moscow, Nauka, 1984, p.22-32, In Russian. 29 refs.
Ice melting, Mars (planet), Permafrost distribution, Topographic features, Extraterrestrial ice, Theories, Stream flow, River basins, Valleys, Water erosion.

39-1453
Structure of the cryolithosphere of the planet Mars. [Struktura kriolitosfery Marsa].
Kuz'min, R.O., Mezhdunarodnyi geologicheskii kongress, 27th, Moscow, Aug. 4-14, 1984. Sravnitel'naia planetologiia, Sektsiia S.19, Doklady, Tom 19 (International Geological Congress, 27th, Moscow, Aug. 4-14, 1984. Comparative Planetology, Section S.19. Proceedings, Vol.19) edited by M.S. Markov, Moscow, Nauka, 1984, p.32-39, In Russian. 18 refs.
Thermokarst, Mars (planet), Permafrost origin, Extraterrestrial ice, Frost shattering, Theories, Meltwater, Polar regions, Permafrost distribution, Ground water.

39-1454
Proceedings.
Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984, Fredericton, University of New Brunswick, [1984], 456p., Refs. passim. With French summaries. Includes discussions. For individual papers see 39-1455 through 39-1473.
Davar, K.S., comp, Burrell, B.C., comp.
River ice, Hydraulics, Freezeup, Ice breakup, Meetings, Drift, Ice forecasting, Ice conditions, Water level, Meteorological factors, Ice water interface.

39-1455
Winter ice regime in the tidal estuaries of the northeastern portion of the Bay of Fundy, N.B.
Desplanque, C., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.7-38, With French summary., Discussion p.32-38. 9 refs.
Bray, D.I.
Ice conditions, Ice formation, Ice breakup, River ice, Sea ice, Estuaries, Tides, Fast ice, Canada—New Brunswick—Bay of Fundy.

39-1456
Study of river ice breakup using hydrometric station records.
Beltaos, S., Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.41-64, With French summary., Discussion p.60-64. 18 refs.
Ice breakup, River ice, Ice conditions, Freezeup, Ice strength, Forecasting, Ice cover thickness, Canada—New Brunswick—Nashwaak River.

39-1457
Forecasting the initiation of ice breakup on the Nashwaak River, NB.
Tang, P.W., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.65-93, With French summary., Discussion p.92-93. 10 refs.
Davar, K.S.
Ice breakup, Ice forecasting, River flow, Ice cover thickness, Heat transfer, Models, Computer applications, Canada—New Brunswick—Nashwaak River.

39-1458
Hydraulics of breakup.
Santeford, H.S., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.95-110, With French summary., Discussion p.110. 6 refs.
Alger, G.R.
Ice breakup, Hydraulics, River flow, Ice cover, Mathematical models, Flow rate.

39-1479
Polarized light scattering by hexagonal ice crystals: theory.
Cai, Q., et al, *Applied optics*, Oct. 1, 1982, 21(19), p.3569-3580, 14 refs.
Liou, K.-N.
Ice optics, Ice crystal structure, Light scattering, Mathematical models, Theories.

39-1480
All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports. [Tezisy dokladov].
Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984, Krasnoyarsk, 1984, 186p., In Russian. For selected summaries see 39-1481 through 39-1497.
Isaev, A.S., ed.
Taiga, Forestry, Forest canopy, Alpine landscapes, Albedo, Revegetation, Spaceborne photography, Mapping, Aerial surveys, Slope processes, Forest fires, Photointerpretation, Geobotanical interpretation, Monitors, Landslides, Paludification, Landscape types, Mudflows.

39-1481
Present state and prospects of aerial and space techniques of surveying Siberian forests. [Sostoianie i perspektivy razvitiia aerokosmicheskikh issledovanii lesov Sibiri].
Isaev, A.S., Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.3-5, In Russian.
Forest land, Aerial surveys, Spaceborne photography, Photointerpretation, Vegetation patterns, Landscape types, Environmental protection, Taiga, Alpine landscapes.

39-1482
Spectral reflectivity of forest vegetation in the northwestern part of the European USSR. [Izuchenie spektral'noi otrazhatel'noi sposobnosti lesnoi rastitel'nosti severo-zapada Evropeiskoi chasti SSSR].
Bogdanov, V.M., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.21-22, In Russian.
Daniulis, E.P.
Albedo, Forest land, Airborne equipment, Forest canopy, Taiga, Solar radiation, Measuring instruments.

39-1483
Basic postulates of the program and compilation methods of the map series "Natural structure of landscapes in the Angara-Yenisey region", scale 1:1 000 000. [Osnovnye polozheniia programmy i metodiki sostavleniia serii kart: Prirodnaia struktura landshaftov Angaro-Eniseiskogo regiona" v masshtabe 1:1 000 000].
Kalashnikov, E.N., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.31-33, In Russian.
Forestry, Mapping, Plant ecology, Taiga, Landscape types.

39-1484
Thematic mapping of forests from satellite photographs. [Tematicheskoe kartografirovanie lesov po materialam aerokosmicheskikh fotos"emok].
Stoliarov, D.P., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.33-35, In Russian.
Minaev, V.N.
Mapping, Forestry, Spaceborne photography, Aerial sruveys, Landscape types, Taiga.

39-1485
Landscape principles of mapping Alpine taiga from spectral satellite photographs. [Landshaftnye printsipy kartografirovaniia gornoi taigi po spektrozonal'nym kosmicheskim fotosnimkam].
Plastinin, L.A., Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.39-40, In Russian.
Alpine landscapes, Spaceborne photography, Photointerpretation, Taiga.

39-1486
Satellite methods of combined thematic mapping of mountain taiga geosystems in the southern Lake Baykal and Transbaikal areas for environmental protection. [Aerokosmicheskie metody sopriazhennogo tematicheskogo kartografirovaniia gorno-taezhnykh geosistem iuzhnogo Pribaĭkal'ia i Zabaĭkal'ia v sviazi s okhranoĭ prirodnoĭ sredy].
Abalakov, A.D., Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.41-42, In Russian.
Alpine landscapes, Taiga, Spaceborne photography, Photointerpretation, Environmental protection.

39-1487
Satellite methods of studying soil cover of forest lands. [Aerokosmicheskie metody issledovaniia i kartografirovaniia pochvennogo pokrova lesnykh territoriĭ].
Andronikov, V.L., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.45-47, In Russian.
Semina, E.V., Shershukova, G.A.
Forest land, Aerial surveys, Spaceborne photography, Photointerpretation, Taiga.

39-1488
Principles of mapping and photointerpretation of soil cover in taiga landscapes. [Printsipy deshifrirovaniia i kartografirovaniia struktury pochvennogo pokrova taezhnykh landshaftov].
Korsunov, V.M., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.47-49, In Russian.
Krasekha, E.N., Gorbachev, V.N., Vedrova, E.F.
Taiga, Spaceborne photography, Cryogenic soils, Photointerpretation, Mapping, Soil structure, Landscape types.

39-1489
Small-scale map of combustible forest materials for the Angara-Yenisey region. [Melkomasshtabnaia karta lesnykh goriuchikh materialov na Angaro-Eniseĭskiĭ region].
Volokitina, A.V., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.54-56, In Russian.
Ryzhkova, V.A.
Forest fires, Litter, Mapping, Taiga.

39-1490
Display function of cosmo-geobotanical mapping of taiga in geological and geomorphological studies. [Indikatsionnaia rol' kosmogeobotanicheskogo kartirovaniia taezhnoĭ zony pri geologo-geomorfologicheskikh issledovaniiakh].
Vasil'chuk, A.I., Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.56-58, In Russian.
Taiga, Landscape types, Mapping, Satellite photography, Geobotanical interpretation.

39-1491
Using the structure of vegetational covers in compiling geobotanical maps of northern taiga of Kola Peninsula (based on satellite photographs). [Ispol'zovanie struktury rastitel'nogo pokrova pri sostavlenii indikatsionnykh geobotanicheskikh kart severnoĭ taĭgi Kol'skogo poluostrova (na osnove aerofotomaterialov)].
Paianskaia-Gvozdeva, I.I., Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.59-60, In Russian.
Taiga, Vegetation patterns, Mapping, Spaceborne photography, Photointerpretation, Geobotanical interpretation.

39-1492
Estimating the possibility of forest cover differentiation from spectral satellite photographs. [Otsenka vozmozhnosteĭ differentsiatsii lesnogo pokrova po spektrozonal'nym kosmicheskim snimkam].
Gribanov, V.IA., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.64-67, In Russian.
Kaplunov, V.IA., Kuz'michev, V.V., Pleshikov, F.I.
Forest land, Spaceborne photography, Photointerpretation, Geobotanical interpretation, Taiga, Forestry, Classifications.

39-1493
Hydrologic differentiation of taiga landscapes. [Gidrologicheskaia differentsiatsiia taezhnykh landshaftov].
Lebedev, A.V., Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.80-82, In Russian.
Taiga, Forest canopy, Snow hydrology, Forest soils, Snow cover effect, Snow depth, Plant ecology, Ecosystems, Snowdrifts, Landscape types.

39-1494
Indications of post-fire stages of pine-stand dynamics on medium-scale aerial photographs. [Deshifrovochnye priznaki stadiĭ poslepozharnoĭ dinamiki sosniakov na aerosnimkakh srednego masshtaba].
Zlobina, L.P., Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.92-93, In Russian.
Forest fires, Revegetation, Aerial surveys, Taiga, Forestry, Spaceborne photography.

39-1495
Using satellite information on forest cover in studying landslides and mudflows in the Caucasus. [K ispol'zovaniiu aerokosmicheskoĭ informatsii o lesnom pokrove pri issledovanii opolznevykh i selevykh iavleniĭ na territorii Bol'shogo Kavkaza].
Imanov, N.A., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.103-104, In Russian.
Babaev, N.S., Israfilov, Sh.I.
Forest soils, Slope processes, Landslides, Mudflows, Satellite photography, Photointerpretation, Alpine landscapes.

39-1496
Monitoring forest fires. [Monitoring lesnykh pozharov].
Valendik, E.N., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.115-117, In Russian.
Sukhinin, A.I.
Forest fires, Monitors, Remote sensing, Taiga.

39-1459
Case studies concerned with ice jamming.
Petryk, S., Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.113-126, With French summary., Discussion p.126. 1 ref.
River ice, Ice breakup, Ice jams, Ice conditions.

39-1460
Cutting trenches in the ice cover to prevent ice jams.
Jolicoeur, L., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. *Proceedings. Compiled by* K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.127-139, With French summary., Discussion p.137-139. 3 refs.
Michel, B., Labbé, J.
Ice cutting, Ice jams, River ice, Ice breakup, Trenching, Countermeasures.

39-1461
Documentation and analysis of the water level profile through an *ice jam, MacKenzie River*, N.W.T.
Rivard, G., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.141-157, With French summary., Discussion p.156-157. 10 refs.
Kemp, T., Gerard, R.
Ice jams, Hydraulics, Models, Internal friction, Water level.

39-1462
Flood protection with ice cover on the Saint Charles River, Quebec City. [Protection Contre les inondations *en présence des glaces*, rivière Saint-Charles à Québec],
Monfet, J., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.159-179, In French with English summary. Discussion p.177-179. 5 refs.
Tremblay, A.R.
Floods, Ice cover effect, Ice breakup, River ice, River flow, Ice floes, Water level, Flow rate.

39-1463
Ice jam research needs.
Gerard, R., MP 1813, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.181-193, With French summary. Discussion p.192-193.
Ice jams, Freezeup, Ice breakup, Ice formation, River ice, Frazil ice, Models, Canada—Northwest Territories—Mackenzie River.
Suggestions developed by the NRCC Working Group on Ice Jams for high priority research needs for ice jams are given. The suggestions concern ice jam formation, development and failure at freeze-up and break-up. Related processes such as frazil formation, hanging dams and ice deterioration were excluded from consideration. It is concluded that, despite significant progress in the past two decades, the work of developing a real understanding of ice jam fundamentals has really only just begun.

39-1464
Iceforms of floating loose covers.
Chee, S.P., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.197-209, With French summary., Discussion p.207-209. 7 refs.
Haggag, M.R.
Ice bottom surface, Floating ice, Hydraulics, Analysis (mathematics), Experimentation.

39-1465
Coverage coefficient for calculating ice volume generated.
Hausser, R., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. *Compiled by* K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.211-224, With French summary., Discussion p.223-224. 9 refs.
Saucet, J.P., Parkinson, F.E.
Floating ice, Ice volume, River ice, Heat transfer, Ice *formation, Heat loss, Analysis (mathematics).*

39-1466
Computer simulation of ice cover formation in the Upper St. Lawrence River.
Shen, H.T., et al, MP 1814, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.227-245, With French summary., Discussion p.245. 23 refs.
Yapa, P.D.
Ice formation, Ice cover thickness, River ice, River flow, Heat transfer, Ice jams, Hydraulics, Computerized simulation, Analysis (mathematics), Canada—Saint Lawrence River.
A computer model was developed for simulating the formation of ice cover in the Upper St. Lawrence River. The model included submodels for the river flow condition, the distribution of water temperature or frazil ice production, and the formation of an ice cover. Distributions of water temperature or ice production are determined by a Lagrangian solution of the equation for the transport of thermal energy subject to surface heat exchange. The formation of an ice cover and ice accumulations is formulated according to existing equilibrium ice jam theories. The hydraulic condition in the river system is determined by an implicit numerical solution of unsteady continuity and momentum equations.

39-1467
Numerical simulation of freeze-up on the Ottauquechee River.
Calkins, D.J., MP 1815, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. *Compiled by* K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.247-277, With French summary., Discussion p.275-277. 18 refs.
Freezeup, River ice, River flow, Meteorological factors, Hydraulics, Ice mechanics, Mathematical models, Water level, Ice edge, Ice cover thickness, Ice jams, Heat transfer, United States—Vermont—Ottauquechee River.
A numerical model of the flow and ice conditions during freeze-up for the Ottauquechee River has been developed and calibrated with reasonable success. A limited sensitivity analysis of the key ice hydraulic modeling coefficients and independent variables was undertaken to examine their effect on the rate of leading edge progression, ice thicknesses and water levels. The criteria for advancement of the leading edge were based on both the entrainment velocity of incoming frazil slush at the leading edge and whether or not the flow condition was sub-critical just upstream of the leading edge. The depositional mode of ice thickening accounted for over 50% of the total ice thickness in the steep reaches and over 80% in 1 km of the pool. The simulation suggests that the initial ice cover thickness during progression can be predicted using the equilibrium ice jam theory with a suitable cohesion coefficient. The inflow ice discharge and ice generated within the reach modeled were important and have to be known with reasonable accuracy to get good simulations of the ice thicknesses, water levels and ice cover progression.

39-1468
***Winter rating curves* and ice volume limited water levels.**
Lavender, S.T., Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.279-294, With French summary., Discussion p.294. 11 refs.
Ice volume, Water level, River ice, River flow, Ice mechanics, Ice cover thickness, Ice formation, Freezeup, Ice breakup, Seasonal variations.

39-1469
Rise pattern and velocity of frazil ice.
Wuebben, J.L., MP 1816, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.297-316, With French summary., Discussion p.315-316. 3 refs.
Frazil ice, River ice, Ice mechanics, Velocity, Tests, Artificial ice.
The objective of this study was to examine the rise pattern and velocity of frazil ice. In addition, discs made of other materials were employed both to facilitate this study and to aid in the development of artificial frazil for future transport studies. The rise velocity is a parameter important to the understanding of frazil entrainment, transport and deposition. Laboratory tests were conducted in a large clear plastic cylinder at controlled temperatures. The rise velocity of real frazil is compared with theory and given an indirect verification that the preferential crystal growth direction increases disc diameter while the thickness remains essentially constant. The effective drag coefficients and rise pattern stability are discussed in terms of a Reynolds-Strouhal number relationship. The results from real and artificial frazil experiments are compared, and criteria for frazil simulation are suggested.

39-1470
Measurements of frazil and drifting ice in the Lachine rapids.
Michel, B., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. *Compiled by* K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.317-343, With French summary. Discussion p.343.
Desroches, P., Dussault, J.G., Fonseca, F., Levan, D.
Frazil ice, Ice mechanics, Ice structure, River ice, Ice formation, *Drift, Water temperature*, Supercooling, Flood control, Canada—Saint Lawrence River.

39-1471
***Anchor ice effects on water levels in Lake St. Louis*, St. Lawrence River at Montreal.**
Parkinson, F.E., Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.345-370, With French summary. Discussion p.368-370.
Bottom ice, Water level, Ice formation, Ice breakup, River ice, River flow, Ice growth, Meteorological factors, Lake ice, Water temperature, Ice cover effect.

39-1472
Improved ice control with better understanding of thermal regime of the international section of St. Lawrence River.
Bunte-Bisnett, D., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.371-386, 6 refs., With French summary.
Gupta, S.K., Penn, R.W.
River ice, Ice control, Thermal regime, Ice booms, Freezeup, Ice formation, Water temperature, Measuring instruments, Freezing *points, Canada—Saint* Lawrence River.

39-1473
Interaction between surface waves and a densely packed broken ice cover.
Foltyn, E.P., et al, Workshop on Hydraulics of River Ice, 3rd, Fredericton, New Brunswick, Canada, June 20-21, 1984. Proceedings. Compiled by K.S. Davar and B.C. Burrell, Fredericton, University of New Brunswick, [1984], p.387-406, With French summary., Discussion p.405-406. 20 refs.
Ponce-Campos, C.D.
Water waves, River ice, Floating ice, Ice floes, Ice cover effect, Ice water interface, Damping, Analysis (mathematics).

39-1474
Submarine tankers proposed for Arctic LNG transport.
Robb, D., *Sea technology*, Feb. 1982, 23(2), p.23-25.
Tanker ships, Marine transportation, Submarines, Ice conditions.

39-1475
Gulf Canada's Beaufort Sea drilling system. *Sea technology*, Apr. 1982, 23(4), p.20-23.
Offshore drilling, Floating structures, Caissons, Offshore structures, Beaufort Sea.

39-1476
Ice crystal formation on aerosol particles with a nonuniform surface.
Gorbunov, B.Z., et al, *Journal of aerosol science*, 1982, 13(1), p.21-28, 9 refs.
Kakutkina, N.A.
Ice crystal growth, Aerosols, Ice crystal nuclei, Ice formation, Surface properties, Analysis (mathematics).

39-1477
Design, installation, and operation described for Beaufort Sea pipelines.
Timmermans, W.J., *Oil and gas journal*, May 10, 1982, 80(19), p.113-120, 125-126.
Offshore structures, Pipe laying, Ice scoring, Subsea permafrost, Sea ice distribution, Dredging, Trenching, Ice conditions, Protection, Gravel, Design, Beaufort Sea.

39-1478
NOAA environment satellites.
Steggall, N., *Spaceflight*, Jan. 1982, 24(1), p.34-35.
Remote sensing, Sea ice distribution, Weather observations, Spaceborne photography, Oceanography, Hydrography.

39-1497
Airborne laser systems for remote sensing of vegetation. (Distantsionnye issledovaniia rastitel'nosti s pomoshch'iu lazernykh samoletnykh sistem).
Kanevskii, V.A., et al, Vsesoiuznaia konferentsiia po aerokosmicheskim metodam issledovaniia lesov, Krasnoiarsk, July 7-9, 1984. Tezisy dokladov (All-Union Conference on aerial and space methods of studying forests, Krasnoyarsk, July 7-9, 1984. Summaries of reports) edited by A.S. Isaev, Krasnoyarsk, 1984, p.137-139, In Russian.
Lasers, Remote sensing, Vegetation, Airborne equipment, Reflection, Albedo, Measuring instruments.

39-1498
Environment of West Antarctica: potential CO2-induced changes: report of a workshop held in Madison, Wisconsin, 5-7 July 1983.
National Research Council. Committee on Glaciology, Washington, D.C., National Academy Press, 1984, 236p., PB85-110 757, Numerous refs. For individual papers see 39-1499 through 39-1510 or F-31103, F-31106, F-31110, F-31114, I-31104, I-31105, I-31107 through I-31109, I-31111, I-31112 and J-31113.
Sea ice, Ice sheets, Ice melting, Sea level, Carbon dioxide, Heat flux, Pollution, Models, Air temperature, Antarctica—West Antarctica.
It has been suggested that a rapid reduction of the ice mass of West Antarctica leading to a drastic rise in sea level might result from CO2-induced warming. Climate factors that provide the principal external forcing for glacial ice of West Antarctica are examined. Topics discussed include: historical changes of atmospheric CO2 and other environmental variables; changes in polar ice sheets; knowledge of the present state of the environment of West Antarctica; model simulations of the present environment; and model predictions of potential CO2-induced changes. Recommendations are made for improving existing data sets and testing and improving model simulations of the atmospheric environment. (Auth.)

39-1499
Data from antarctic ice cores on CO2, climate, aerosols, and changes in ice thickness.
Lorius, C., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.49-62, PB85-110 757, 33 refs.
Ice cores, Carbon dioxide, Climatic changes, Aerosols, Ice cover thickness.
Analyses of polar ice cores have yielded a number of parameters that provide proxy data on climate changes and on important factors that may influence them. In particular, the isotopic composition of the ice is an indicator of temperature change, the amount of impurities is linked with aerosol concentration, and the amount and composition of entrapped air reflect the ice thickness and atmospheric composition. Appropriate information has already been obtained from antarctic ice cores on time scales covering climatic transition from the late glacial maximum to the Holocene and the last few hundred years or so. Both of these periods are characterized by a significant and comparable increase in CO2, but climatic parameters and other forcing factors show very different changes. (Auth.)

39-1500
Variability of atmospheric circulation at the surface of the South Pacific Ocean in summer.
Loon, H. van, Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.63-72, PB85-110 757, 9 refs.
Ocean currents, Water temperature, Atmospheric disturbances, Antarctica—Antarctic Peninsula, Antarctica—Weddell Sea.
A description is given of the ocean currents about the Antarctic Peninsula and in the Weddell Sea. It is based primarily on data gathered in those regions by whaling crews during the IGY. The data consist of temperatures at a depth of 200 m which define the currents around the continent when used in conjunction with surface weather patterns. A series of charts showing these elements augments the text.

39-1501
Atmospheric circulation affecting the west antarctic region in summer.
Trenberth, K.E., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.73-87, PB85-110 757, 12 refs.
Atmospheric circulation, Air temperature, Storms.
A series of charts and graphs of the Southern Hemisphere circulation is discussed in the text. Parameters of these visual displays include, among others: geostrophic wind in cross section; mean geopotential height fields at 500 mb, 1000-500 mb thickness field; geostrophic westerly wind component at 500 mb; locations of maximum occurrences of various phenomena related to storm frequency. The erratic nature of cyclonic feeding for many of the antarctic stations is pointed out as a reason for lack of understanding of weather processes on and near the continent.

39-1502
West antarctic sea ice.
Ackley, S.F., MP 1818, Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.88-95, PB85-110 757, 14 refs.
Sea ice, Ice cover effect, Climatic changes, Carbon dioxide, Heat transfer, Antarctica—Amundsen Sea, Antarctica—Ross Sea.
In constructing models for predicting antarctic sea ice effect on global climate, temperature and wind fields over and below the pack ice must be analyzed. These elements affect the maximum extent of the ice pack and the ice dynamics in the pack strongly modulates the CO2-induced temperature rises. These factors are discussed in text and diagrams.

39-1503
Associated changes in west antarctic cyclonic activity and sea ice.
Carleton, A.M., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.96-106, PB85-110 757, 9 refs.
Sea ice distribution, Atmospheric disturbances.
A series of charts is presented to show the relationship between the extent of pack ice and cyclonic activity. The period of this analysis generally extends from about 1972 through 1979. Summer and winter sea ice extents and cyclogenesis/cyclolysis patterns are shown and significant features are compared.

39-1504
Precipitation regime of the west antarctic ice sheet.
Bromwich, D.H., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.107-115, PB85-110 757, 14 refs.
Sea ice distribution, Air flow, Humidity, Antarctica—West Antarctica.
This set of charts depicts humidity over West Antarctica and the air flow over the pack ice with cyclonic centers over the Ross and Weddell Seas. It is concluded that earlier estimates of the moisture holding capacity of west antarctic air were about four times too high because low tropospheric temperatures were modeled 10C too warm.

39-1505
West antarctic temperatures, regional differences, and the nominal length of summer and winter seasons.
Limbert, D.W.S., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.116-139, PB85-110 757, 24 refs.
Air temperature, Sea ice, Climate, Antarctica—West Antarctica.
Available west antarctic temperature records are discussed, related to other antarctic regions, and, where possible, to the atmospheric and oceanic circulations. Because of the sparseness of long temperature records, some proxy data based on snow accumulation rates are used. (Auth.)

39-1506
Present and future melting on antarctic ice shelves.
Paterson, W.S.B., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.140-154, PB85-110 757, 42 refs.
Ice shelves, Ice melting, Carbon dioxide, Water temperature.
Data on surface ice melt rates on ice shelves are reviewed; their increase by CO2-induced warming is predicted; and the impact of these conditions is assessed. Atmospheric warming will increase the ocean temperature and thus the amount of heat available for basal melting, which may well be more important than changes at the surface. (Auth.)

39-1507
Atmospheric general circulation model simulations of the modern antarctic climate.
Schlesinger, M.E., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.155-196, PB85-110 757, 42 refs.
Atmospheric circulation, Environment simulation, Sea ice, Water temperature, Precipitation (meteorology).
Modern summer and winter climates in and around Antarctica are simulated by six contemporary atmospheric general circulation models. Also shown for each model are the number of vertical layers, pressure at the top of the model atmosphere, horizontal variation of dependent variables, horizontal resolution, source for the prescribed SST and sea ice, and months used to form the summer and winter climates. An example of the prescribed surface boundary conditions is given. (Auth.)

39-1508
On modeling the oceanic environment of West Antarctica, including CO2-induced changes.
Semtner, A.J., Jr., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.197-211, PB85-110 757, 17 refs.
Environment simulation, Water temperature, Sea ice, Ocean currents, Ice shelves, Carbon dioxide.
Elements of the model are set forth and their places in the structure and their influence are discussed. Some of the topics elaborated on are atmospheric response to changes in sea surface temperatures, sea ice, current layers and their interactions and influence, and ice shelf melting as warm currents intrude. Numerous diagrams, graphs, and charts are presented and explained.

39-1509
Potential effect of CO2 warming on sub-ice-shelf circulation and basal melting.
MacAyeal, D.R., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.212-221, PB85-110 757, 8 refs.
Ice shelves, Ice melting, Ice bottom surface, Ocean currents, Tidal currents, Carbon dioxide, Antarctica—Ross Ice Shelf, Antarctica—Ronne Ice Shelf, Antarctica—Filchner Ice Shelf.
The author argues, and is supported by others, that the key link in the chain that binds shelf ice to West Antarctica is the state of the ocean beneath the shelves. If there should be sufficient warming of those waters through advective currents, accelerated melting of the ice shelves from below could result. Present knowledge of sub-ice shelf currents is reviewed and a priority list of research to expand that knowledge is presented.

39-1510
Modelled and observed sea ice variations in the West Antarctic and surrounding regions.
Parkinson, C.L., Environment of West Antarctica: potential CO2-induced changes; report of a workshop, July 1983, Washington, D.C., 1984, p.222-236, PB85-110 757, 27 refs.
Sea ice distribution, Seasonal variations, Carbon dioxide, Models, Spaceborne photography.
Supported by satellite data, the author depicts and reviews the seasonal states of southern sea ice. Accuracy of data on these variations has substantially improved over the past 20 years as satellite technology provided solid information to work from. These images have shown decreases in sea ice extent which could be attributed to CO2 increases. Interest in modeling antarctic sea ice heightened as more data became available and a large measure of success was achieved. The value of models which couple the aspects of sea, ocean, and atmosphere, has not been established.

39-1511
Evaluation of concrete cores from Waterbury Dam, Waterbury, Vermont.
Pace, C.E., et al, *U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. Miscellaneous paper*, Sep. 1982, WES/MP/SL-82-14; CTIAC-53, 61p. ADA-123 418/6.
Wong, G.S.
Concrete strength, Freeze thaw cycles, Cracking (fracturing), Military engineering, Dams, Surface properties, Compressive properties.

39-1512
Infrared signatures from atmospheric clouds.
Stanton, A.C., et al, *U.S. Air Force Geophysics Laboratory. Technical report*, May 1980, ARI-RR-190; AFGL-TR-80-0217, 67p. ADA-123 404/6.
Robertson, D.C.
Ice crystal optics, Cloud physics, Infrared radiation, Supercooled clouds, Light scattering, Solar radiation, Models.

39-1513
Acid precipitation in southeastern Wyoming.
Ahern, J., et al, *Wyoming Water Research Center, Laramie. Report*, Sep. 1983, W84-00639; OWRT-A-032-WYO(1), 105p. PB84-132 521.
Baird, C.
Snow composition, Air pollution, Precipitation (meteorology), Chemical properties, Rain, Environmental impact, United States—Wyoming.

39-1514
Permafrost research: an assessment of future needs.
National Research Council. Polar Research Board. Committee on Permafrost, Washington, D.C., 1983, 121p., PB84-129 741, Contract No. NSF-DPP82-07098.
Permafrost heat transfer, Permafrost mass transfer, Engineering, Permafrost hydrology, Ground ice, Active layer, Permafrost thermal properties, Rheology, Detection, Mapping, Cold weather construction.

39-1515
Pipeline insulation: heat loss and corrosion prevention, 1972-1983 (Citations from the Engineering Index Data Base).
U.S. National Technical Information Service, Dec. 1983, 81p., PB84-856 616, Supersedes PB82-860 685.
Pipeline insulation, Thermal insulation, Heat loss, Bibliographies, Corrosion, Countermeasures, Underground pipelines, Heat transfer.

39-1516
M1 winter tank test (traction devices). Final report.
Smith, R.L., Houghton, Michigan Technological University, Keweenaw Research Center, Oct. 1982, 38p. ADA-123 525/8.
Tanks (combat vehicles), Ice cover effect, Traction, Snow cover effect, Military operation, Trafficability.

39-1517
Proceedings; Resources and dynamics of the boreal zone.
Conference [on] Resources and Dynamics of the Boreal Zone Thunder Bay, Ontario, Aug. 1982, Ottawa, ACUNS, 1983, 544p., Refs. passim. For selected papers see 39-1518 through 39-1524.
Wein, R.W., ed, Riewe, R.R., ed, Methven, I.R., ed.
Forest ecosystems, Tundra, Soil texture, Forest fires, Hummocks, Plant ecology, Permafrost.

39-1518
Bioclimatic regions as a framework for the study of boreal forest ecosystems.
Gerardin, V., et al, Resources and dynamics of the boreal zone; Proceedings of a conference held at Thunder Bay, Ontario, August 1982, edited by R.W. Wein, R.R. Riewe and I.R. Methven, Ottawa, ACUNS, 1983, p.52-69, Refs. p.67-69.
Ducruc, J.P.
Forest ecosystems, Tundra, Climatic factors, Soils, Vegetation, Mosses.

39-1519
Ecological land classification and evaluation in southern Yukon: an aid in identifying research and management requirements.
Senyk, J.P., Resources and dynamics of the boreal zone; Proceedings of a conference held at Thunder Bay, Ontario, August 1982, edited by R.W. Wein, R.R. Riewe and I.R. Methven, Ottawa, ACUNS, 1983, p.70-82, 9 refs.
Landforms, Plant ecology, Forest ecosystems, Permafrost, Hummocks, Terrain identification, Classifications, Thermokarst, Peat, Canada—Yukon Territory.

39-1520
Classification and ordination of forest ecosystems in the Great Claybelt of northeastern Ontario.
Jones, R.K., et al, Resources and dynamics of the boreal zone; Proceedings of a conference held at Thunder Bay, Ontario, August 1982, edited by R.W. Wein, R.R. Riewe and I.R. Methven, Ottawa, ACUNS, 1983, p.83-96, 14 refs.
Pierpoint, G., Whickware, G.M., Jeglum, J.K.
Forest ecosystems, Vegetation, Soil texture, Soil water, Mosses, Hummocks, Classifications, Canada—Ontario—Great Claybelt.

39-1521
Seasonal patterns of nitrogen mineralization following harvesting in the white spruce forests of interior Alaska.
Gordon, A.M., et al, Resources and dynamics of the boreal zone; Proceedings of a conference held at Thunder Bay, Ontario, August 1982, edited by R.W. Wein, R.R. Riewe and I.R. Methven, Ottawa, ACUNS, 1983, p.119-130, 29 refs.
Van Cleve, K.
Forest land, Nutrient cycle, Soil chemistry, Seasonal variations, United States—Alaska.

39-1522
Limitations to predictability of plant succession in northern ecosystems.
Wein, R.W., et al, Resources and dynamics of the boreal zone; Proceedings of a conference held at Thunder Bay, Ontario, August 1982, edited by R.W. Wein, R.R. Riewe and I.R. Methven, Ottawa, ACUNS, 1983, p.214-225, Refs. p. 222-225.
El-Bayoumi, M.A.
Ecosystems, Plant ecology, Introduced plants, Distribution, Forecasting, Canada—Northwest Territories—Mackenzie River.

39-1523
Forest fire weather and wildfire occurrence in the boreal forest of northwestern Ontario.
Stocks, B.J., et al, Resources and dynamics of the boreal zone; Proceedings of a conference held at Thunder Bay, Ontario, August 1982, edited by R.W. Wein, R.R. Riewe and I.R. Methven, Ottawa, ACUNS, 1983, p.249-265.
Street, R.B.
Forest fires, Meteorological factors, Forest ecosystems, Distribution, Seasonal variations, Canada—Ontario.

39-1524
Bioconversion of peat: utilization of peat extracts as a fermentation substrate.
Martin, A.M., Resources and dynamics of the boreal zone; Proceedings of a conference held at Thunder Bay, Ontario, August 1982, edited by R.W. Wein, R.R. Riewe and I.R. Methven, Ottawa, ACUNS, 1983, p.370-377, 19 refs.
Peat, Microbiology, Fungi, Nutrient cycle, Biomass, Agriculture.

39-1525
New arctic mobile rig design completed. *Offshore,* Nov. 1984, 44(12), p.84.
Offshore structures, Concrete structures, Ice control, Offshore drilling, Steel structures.

39-1526
Hybrid designed for shallow Arctic operations. *Offshore,* Nov. 1984, 44(12), p.106.
Offshore structures, Concrete structures, Steel structures, Ice loads, Stability, Soil strength, Bottom sediment, Offshore drilling.

39-1527
Aircraft accident report—World Airways, Inc., Flight 30H, N112WA McDonnell Douglas DC-10-30, Boston-Logan International Airport, Boston, Massachusetts, January 23, 1982.
U.S. National Transportation Safety Board. Bureau of Accident Investigation, *U.S. National Transportation Safety Board. Aircraft accident report,* Dec. 15, 1982, NTSB-AAR-82-15, 109p. PB82-910 415.
Aircraft landing areas, Runways, Road icing, Accidents, Snow cover effect, Ice cover effect, Friction.

39-1528
Filchner-Ronne Ice Shelf programme, Report 1 (1984).
Kohnen, H., comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, 38p., Refs. passim.
Ice shelves, Research projects, Glaciology, Oceanography, Ice cover thickness, Remote sensing, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf.
Glaciological investigations carried out on the Filchner/Ronne Ice shelves in the past, current activities, and future plans are summarized. Representatives of Argentina, Federal Republic of Germany, Great Britain, Norway, the United States, and the USSR report on their countries' programs. The goal is a coordinated, long-term, effort leading to a comprehensive investigation which will result in a detailed picture of the glaciological regime of these long known, seldom studied, and little understood ice shelves.

39-1529
Review of evidence for Late Tertiary shorelines occurring on South Atlantic coasts.
Nunn, P.D., *Earth-science reviews,* 1984, 20(3), p.185-210, Refs. p.205-210.
Sea level, Glacial deposits, Climatic changes, Glacial geology, Ice sheets.
Possible late Tertiary shorelines from South Atlantic islands are described, as are those which have been positively dated to this period. Sedimentary and morphological indicators of tertiary high sea-levels are described from antarctic coasts and South American and African Atlantic continental margins. A summary of the evidence for Tertiary shorelines on South Atlantic coasts is tabulated. Methods which have been or could be used to date late Tertiary shorelines are described. It is suggested that fluctuations in the Antarctic ice sheet during the late Tertiary induced substantial glacio-eustatic changes of sea-level which may have been most marked in adjacent areas. This is considered to be the mechanism through which late Tertiary shorelines in the area were formed yet, considering the paucity of the morphological and sedimentary data these should not be used as the basis for a eustatic chronology. (Auth. mod.)

39-1530
Late Paleozoic Gondwana glaciation.
Martin, H., *Geologische Rundschau,* May 1981, 70(2), p.480-496, In English with German, French and Russian summaries. Refs. p.494-496.
DLC QE1.G4917
Glaciation, Glacial deposits, Drift.
The glacial deposits of Gondwana are spread over one whole hemisphere. On the reassembled Gondwana continents they still occupy an area exceeding that of the Pleistocene glaciation. During Stephanian-Sakmarian time, when the pole wandered over Antarctica, large ice sheets reached sea level in all the major depositories. Palaeotopographical reconstructions allow the conclusion that some of the ice centers were supported by uplands which reached altitudes of up to 1,500 m above sea level. Depending on their palaeotopographical positions the glacigenic sediments exhibit the full facies range to be expected between glaciated uplands and glaciomarine environments. There are indications that ice may have flowed from Africa into the Paraná Basin, and from Antarctica into the Great Karoo Basin and into Australia. There is some evidence that the final deglaciation proceeded in stages from South America over Africa to Antarctica. (Auth.)

39-1531
Landsat images of Antarctica. [Landsat-Bilder der Antarktis]
Hoppe, P., et al, *Geologische Rundschau,* May 1981, 70(2), p.637-647, In German with English, French and Russian summaries. 6 refs.
Tessensohn, F.
DLC QE1.G4917
Glaciers, Antarctica—Victoria Land.
In the Antarctic summer of 1979/80 the German Antarctic North Victoria Land Expedition carried out geoscientific investigations in the northern part of Victoria Land. Landsat satellite images from a section of the northeastern corner of Victoria Land, west of the Ross Sea, are described. These photos represent the first digital image processing for this area. Their value can be discerned already, especially in terms of knowledge on the glaciology, geomorphology, and geology of this region. (Auth.)

39-1532
Polar ice sheets: developments since Wegener.
Robin, G. de Q., *Geologische Rundschau,* May 1981, 70(2), p.648-663, In English with German, French and Russian summaries. Refs. p.661-663.
DLC QE1.G4917
Ice sheets, Ice physics, Ice mechanics, Computerized simulation, Ice models, Low temperature research.
Wegener's expeditions pioneered many measurements that are now essential for computer modelling of ice sheets. Advances in knowledge of accumulation, thickness, temperature, crystal fabric and surface mapping of ice sheets and of impurities, gas content and isotopic ratios of ice cores from these ice sheets are outlined before computer modelling work is discussed. The value of such studies in providing large scale tests of geophysical concepts is emphasized. The paper concludes by suggesting that the drag of continental ice sheets on the top of continental blocks might be of comparable magnitude and tend to balance forces on the base of these blocks by motion of the asthenosphere. Apart from providing a possible reason for the aseismic nature of the antarctic and Greenland land masses, the hypothesis provides a suitable link between Wegener's interest in continental ice sheets and continental drift. (Auth.)

39-1533
Lower atmosphere of the polar regions.
Radok, U., *Geologische Rundschau,* May 1981, 70(2), p.703-724, In English with German, French and Russian summaries. Refs. p.721-724.
DLC QE1.G4917
Blowing snow, Ice crystals.
Four studies of the free polar atmosphere with kites and tether balloon soundings to above 3000 m, polar aerology advanced to the first full upper air network during the IGY (1957/8). While its replacement by satellite remote sensing is gradually taking shape, the accumulated polar information has been thoroughly analyzed; a series of comprehensive accounts is referenced. The topics singled out for this review are the surface energy balance and the polar inversion, the katabatic winds and snow drift, and the aerosols of the polar atmosphere. (Auth. mod.)

39-1534
Hemispheric circulation asymmetry during Late Tertiary.
Flohn, H., *Geologische Rundschau,* May 1981, 70(2), p.725-736, In English with German, French and Russian summaries. Refs. p.735-736.
DLC QE1.G4917
Glaciation, Ice formation, Paleoclimatology.
Recent data obtained within the Deep Sea Drilling Project in the southern oceans revealed that the formation of antarctic sea-ice started 38 m.y.b.p. ago at the beginning of the Oligocene. The antarctic ice-cap reached nearly its present volume during the Middle Miocene (14-12 m.y.b.p.) and a volume greater than the present during the Messinian (6-5 m.y.b.p.). This evolution indicates a period of about 10 m.y. during which East Antarctica was highly glaciated, while the Arctic Ocean was essentially ice-free. This asymmetric pattern is compared with the present asymmetry (unipolar versus bipolar glaciation); the annually averaged position of the "meteorological equator" had then displaced from about Lat. 6 deg N today to about 10 deg N. Some estimates of the heat budget terms in polar latitudes at a glaciated continent and at an ice-covered ocean are given. A preliminary review of paleoclimatic data reveals significant shifts of the position of the climatic belts at both hemispheres. (Auth. mod.)

39-1535
Study of Quaternary glaciation in Mts. Tomur-Hantengri area, Tian Shan.
Shi, Y., et al, *Journal of glaciology and cryopedology,* 1984, 6(2), p.1-14, 15 refs., In Chinese with English summary.
Zheng, B., Su, Z., Mu, Y.
Alpine glaciation, Quaternary deposits, Glacier surveys, Mountain glaciers, Paleoclimatology, Soil chemistry, Slopes, Pleistocene, China—Tian Shan.

39-1536
Discussion on the periglacial development in the northeast marginal region of Qinghai-Xizang Plateau.
Xu, S., et al, *Journal of glaciology and cryopedology*, 1984, 6(2), p.15-25, 18 refs., *In Chinese with English* summary.
Zhang, W., Xu, D., Shi, S.
Periglacial processes, Glaciation, Mountain glaciers, Carbon isotopes, Paleoclimatology, Distribution, China—Qinghai-Xizang Plateau.

39-1537
Quantitative analysis of snow-line zonality.
Jiang, Z., *Journal of glaciology and cryopedology*, 1984, 6(2), p.27-35, 6 refs., In Chinese with English summary.
Snow line, Humidity, Temperature distribution, Seasonal ablation, Altitude, Precipitation (meteorology), Analysis (mathematics).
Horizontal snow-line zonality in the Southern and Northern Hemispheres obeys the mathematical model of normal frequency distribution function. *Maximum* values appear at a low latitude and inflection points appear at a middle latitude area. Snow line elevation depends on the relative annual average temperature and the difference between annual ablation value and precipitation. An analysis of the model shows that the snow-line zonality results from the zonality of moisture and heat distribution. Data are given on mean air temperature and precipitation in both hemispheres.

39-1538
Avalanches and glacier at Hailougou in the Mt. Gongga.
Wang, Y., et al, *Journal of glaciology and cryopedology*, 1984, 6(2), p.37-44, In Chinese with English summary.
Shao, W.
Glacier ablation, Glacier surveys, Avalanche formation, Mountain glaciers, Icefalls, Precipitation (meteorology), Snow line, Altitude, China—Gongga Mountain.

39-1539
Characteristics of glacial flood—example of rivers in Xinjiang.
Lai, Z., *Journal of glaciology and cryopedology*, 1984, 6(2), p.45-52, 5 refs., In Chinese with English summary.
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A general account of oceanographic studies by Lamont-Doherty Observatory scientists is given. Maps and charts illustrate the antarctic geostrophic current at the sea surface relative to the 1000-dbar level; temperature, salinity, silicate, and phosphate in the surface waters between South Africa and Antarctica; vertical temperature sections spaced about 100 km apart and extending north-south across the Ross Sea continental shelf; and the Weddell Polynya positions between 1973 and 1979.

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39-1591
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39-1594
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39-1595
Calculating thermal and filtration regimes of the concrete-earth structure junctions of the type "hydroelectric power plant-earth dam" or "earth dam-spillway" in the Far North. [Raschet teplofil'tratsionnogo rezhima sopriazheniia zemlianykh i betonnykh sooruzhenii tipa "GES-zemlianaia plotina" ili "vodosbros-zemlianaia plotina" dlia uslovii Krainego Severa],
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39-1596
Problems and efficiency of engineering-geological studies for power engineering construction in regions with severe climatic conditions. [Problemy i effektivnost' inzhenerno-geologicheskikh izyskanii dlia energeticheskogo stroitel'stva v raionakh s surovym klimatom],
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39-1599
Expedition Antarktis II with RV *Polarstern* 1983/84; Report of leg 4 of the voyage: Punta Arenas to Capetown. [Die Expedition Antarktis-II mit FS *Polarstern* 1983/84; Bericht vom Fahrtabschnitt 4 Punta Arenas-Kapstadt (Ant-II/4)],
Kohnen, H., ed, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.1-185, In German and English.
Expeditions, Ice shelves, Research projects, Logistics, Polar regions.
The work contains expedition reports covering the period from Jan 6-Mar 9, 1984 and includes overall phases of resupply of Georg von Neumayer Station and the summer research program there; the start of the Filchner Ice Shelf Project; and a marine research program along the antarctic coast from 8W to 60W which included projects in biology, geology, geophysics, meteorology, and oceanography. General overviews of the expedition outline the programs, goals, and research locations; give personnel lists, participating institutions, and schedules; show expedition routes; and locate oceanographic stations occupied. For selected individual reports see 39-1600 through 39-1615 or B-31161, 31162; C-31157, 31168; E-31163, 31164, 31170; F-31155, 31156, 31158, 31159; G-31166, 31167; I-31169; and J-31160, 31165.

39-1600
Program and preliminary data of glaciological studies of the Filchner Ice Shelf 1983/84. [Programm und vorläufige Ergebnisse der glaziologischen Arbeiten auf dem Filchner-Schelfeis 1983/84],
Reinwarth, O., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.37-52, In German. 11 refs.
Lange, M., Bässler, K.-H.
Traverses, Ice temperature, Snow temperature, Ice cores, Antarctica—Filchner Ice Shelf.
A report is given of some early results of a traverse extending to about 150 nm SW of Filchner Station made from Jan 1 through Feb 13, 1984. During the traverse ice temperature measurements at 10 m depth were made at Stations 141, 240, 241, and 340 and a snow/ice profile interpretation was developed. Additionally, heat capacity measurements of the upper 2 to 3 m of the ice were made using a needle sonde. At Station 340 ice cores were drilled to a depth of 100 m to measure temperature. Other glaciological aspects were observed closer to Filchner Station and at the ice edge.

39-1601
Survey of the ice shelf edges in the eastern and southern Weddell Sea.
Lange, M.A., *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.53-56, 3 refs.
Sea ice distribution, Ice edge, Antarctica—Ekström Ice Shelf, Antarctica—Riiser-Larsen Ice Shelf, Antarctica—Brunt Ice Shelf, Antarctica—Filchner Ice Shelf.
The study was accomplished using the ATLAS 8500 AC/TM radar system aboard *Polarstern*. At distances of <12 nm, shipboard resolution produced position accuracies of 0.2 nm in distance and 0.2 deg azimuth. The ice edge was surveyed from 8W to 60W encompassing the Ekström, Risser-Larsen, Brunt, and Filchner Ice Shelves.

39-1602
Geodetic survey in the area of the Filchner Ice Shelf Project 1983/84 and on the Ekström Ice Shelf. [Geodätische Messungen im Rahmen des Filchner-Schelfeis-Projektes 1983/84 und auf dem Ekström-Schelfeis],
Karsten, A., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.57-63, In German.
Ice shelves, Ice mechanics, Ice deformation, Geodetic surveys.
Some of the research activities of three working parties are outlined. Strain rates and velocity fields were determined for the shelf ice in their work areas. Logistical requirements for the three parties were established and set up at the various field stations. Ice dynamics and deformation were measured and geographic positions of the field stations were determined. Geophysical and meteorological observations were made at eastern Filchner Ice Shelf locations; firn and snow stratigraphy at others; and *Polarstern* radar surveyed the ice edge at the base of the Antarctic Peninsula. On Ekström Ice Shelf, in addition to motion and strain field measurements, work was done in engineering glaciology, meteorology, and isostasy.

39-1603
Geophysical and glaciological investigations in the vicinity of Filchner and Georg von Neumayer Stations during the 1983/84 field season. [Geophysikalische und glaziologische Untersuchungen in der Umgebung der Filchner- und der GvN-Station in der Saison 1983/84],
Thyssen, F., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.64-70, In German. 2 refs.
Blindow, N., Hungeling, A., Hoyer, M.
Ice shelves, Ice cover strength, Ice structure, Electromagnetic prospecting, Seismic reflection.
A brief project outline is given, accompanied by charts and diagrams of the research region and electromagnetic reflection data. The projects include a 60 km long electromagnetic profile of sea ice strength; aerial survey of the ice edge; electromagnetic waves in firn and ice for fine structure analysis; ice thickness and temperature measurements; and 5 24-channel seismic profiles around Filchner Station.

39-1604
Report of the engineering glaciology group on their work during the 1983/84 Expedition at GvN and Filchner Stations. [Bericht der Gruppe "Ingenieurglaziologie" über die Arbeiten der Expedition 1983/84 an der Georg-von-Neumayer- und Filchner-Station],
Jessberger, H.L., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.71-81, In German. 6 refs.
Bässler, K.-H.
Ice shelves, Ice deformation, Ice drills, Antarctica—Filchner Ice Shelf.
Discussed in this report and illustrated by charts and diagrams are: the *in situ* measurement of and the state of deformation of the shelf ice at the stations, the effect it is having on structures such as the meteorology mast, and the ice drill used during the investigations.

39-1605
Vertical tidal motion of Filchner Ice Shelf. [Gezeiten-Vertikalbewegung des Filchner Schelfeises],
Eckstaller, A., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.82-97, In German. 2 refs.
Miller, H.
Tides, Recording instruments, Ice shelves, Antarctica—Filchner Ice Shelf.
It was planned that, during the survey of the Filchner Ice Shelf, the recording of the vertical tidal motions of the sea beneath the shelf would be expanded and that the reaction of the shelf ice to the sea swell would be monitored. To these ends tidal instrumentation was installed at Filchner Station and at other data points along the traverse route, and information on the ebb and flow of the sea was gathered. First results of this program are assessed and the instruments are evaluated.

39-1606
Biology and structure of sea ice in the eastern and southern Weddell Sea.
Dieckmann, G., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.100-105.
Lange, M.
Cryobiology, Sea ice, Ice temperature, Ice composition.
A brief overview of the results of ice coring in the Weddell Sea is given. Cores were retrieved by going directly onto the ice from FS *Polarstern* or by helicopter. Temperature and chemical data were obtained but analysis has not been completed. Cruise track chart is provided; a photograph shows the drilling operation; a graph profiles the ice to a depth of 300 cm; and a table summarizes the ice core data.

39-1607
Distribution and ecology of the macrobenthos in the southern and southeastern Weddell Sea. [Verbreitung und Ökophysiologie des Makrozoobenthos in der südlichen und südöstlichen Weddell See],
Voss, J., *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.106-115, In German.
Ecology, Sediments, Sea ice, Benthos.
Descriptions are given of collecting sediments and the ecological denizens of the benthos using trawls and dredges. The search area lay along the Filchner Ice Shelf edge between 48W and 60W and between 33W and 39W extending from 75.5S to 77.5S. A station list and observational data are included and show station number, location, equipment used, depth and time of search, and bottom composition. Organisms were broadly identified and preserved for further study.

39-1608
Marine geophysical work during Antarctic II/4.
Miller, H., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.116-128
Lippmann, E., Kallerhoff, W.
Marine geology, Seismic reflection, Magnetic surveys, Seismic refraction, Antarctica—Weddell Sea.
Seismic reflection profiling and marine magnetic profiling were carried out in the southern and southwestern Weddell Sea. In addition two seismic refraction lines for studies of crustal structure were observed with recording stations on land or on Filchner Ice Shelf. (Auth.)

39-1609
Marine geology, SEA BEAM and 3.6 kHz measurements during the German Antarktis II/4 Expedition.
Haase, G., *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.129-136.
Bottom sediment, Drill core analysis, Profiles, Marine geology, Antarctica—Weddell Sea.
While crossing the Weddell Sea en route to GvN Station, bottom profiling systems were operated continuously, producing reliable results over a profile length of 1408 nm. Penetration depths ranged from 90 m north of 66S to 0-15 m south of 66S. Marine geology was investigated in three areas: Weddell Polynya, one station off Kapp Norvegia, and two stations south of the west Indian Ridge. Stations were sampled with a box corer and a gravity corer; results are shown in tables. Four types of surface sediment were distinguished.

39-1610
Hydrographic investigations at the edge of the Filchner Ice Shelf. [Hydrographische Untersuchungen am Rand des Filchner Schelfeises].
Rohardt, G., *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.137-143, In German. 4 refs.
Hydrography, Water temperature, Tides, Ice shelves.
The oceanographic program is reviewed. CTD sounding of the shelf ice region for carrying out water mass analysis, beginning construction of a permanent station above the Filchner mooring; continuing oceanographic studies with hydrographic measurements. For these a section was retraced along the ice front from 46W to the Antarctic Peninsula and a second one over the eastern half of the Filchner Depression. Agreement with earlier measurements was established. Additionally, the permanent station shows tide effects near the ice front where warm deep water intrudes upon the shelf.

39-1611
Operation of the research aircraft Polar I and Polar II in the Antarctic 1983/84. [Der Einsatz der Forschungsflugzeuge Polar I und Polar II in der Antarktis 1983/84].
Kohnen, H., *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.144-148, In German.
Airplanes, Cold weather operation, Logistics.
This was the first season in which the Dornier 128-6 and Dornier 208-100, Polar I and II, respectively, were used in support of the German expedition. Their performances are reviewed and evaluated. They are described as having been fruitful and successful and as having provided a higher degree of mobility to the field parties, in spite of a range-payload ratio which limited their radius of operation to about 800 km.

39-1612
Aerial glaciological and geophysical measurements near Georg von Neumayer Station, New Schwabenland, and on the Filchner Ice Shelf near Filchner Station. [Glaziologisch-geophysikalische Flugvermessungen in der Umgebung der Georg-von-Neumayer Station, in Neuschwabenland sowie auf dem Filchner-Schelfeis in der Umgebung der Filchner-Station].
Thyssen, F., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.149-155, In German. 3 refs.
Kahnt, W.
Airplanes, Ice shelves, Ice cover thickness, Measuring instruments, Antarctica—Filchner Ice Shelf, Antarctica—Georg von Neumayer Station, Antarctica—Filchner Station.
Aerial measurements of tracks and locations are shown in the four figures of the report. For these reconnaissance program the DO-228 was equipped with an aerial camera, a magnetometer, VLF and Doppler navigation systems, and an electromagnetic ice thickness measurement instrument. The program, equipment, operation, and results are discussed.

39-1613
Photogrammetry 1983/84 in western New Schwabenland. [Photogrammetrie 1983/84 im westlichen Neuschwabenland].
Sievers, J., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.156-164, In German.
Walter, H.
Aerial surveys, Photogrammetry, Photography, Snow cover effect.
Various aspects of difficulties to anticipate in order to accomplish the program are outlined. Preparations necessary to reduce the problems brought on by the character of Antarctica and training with the equipment to be used are shown. Two major conditions in Antarctica are discussed and their effects on the program are examined. These involve mostly light reflection from snow cover, both wide, uninterrupted expanses and large and small patches in mountainous regions. Choices in types of film, shutter and light settings, and filters to ease these conditions are discussed.

39-1614
MEFIS--a mesoscale meteorological experiment in the edge area of the Filchner Ice Shelf. [MEFIS--ein mesoskaliges meteorologisches Experiment im Kantenbereich des Filchner Schelfeises].
Schaller, E., *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No. p.165-171, In German.
Air temperature, Humidity, wind (meteorology), Ice shelves, Antarctica—Filchner Ice Shelf.
The experiment, conducted by three institutions having meteorological programs, was undertaken over a period of about one month. The objective was to gather near-surface atmospheric data in the vicinity of the edge of the ice shelf over a horizontal range of about 40-45 km. This was done by setting out a network of automatic sensors which measured temperature, humidity, wind speed and direction. Analyses of the data will be used to assess boundary layer problems of temperature discontinuities, daily energy variations, and case studies of lower atmosphere disturbances. Discussions and charts deal with gathering of the data and the uses to which they will be put.

39-1615
Geological investigations in the northern Ahlmann Ridge, middle New Schwabenland, Antarctica. [Geologische Untersuchungen im nördlichen Ahlmann-Rücken, mittleres Neuschwabenland/Antarktika].
Spaeth, G., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1984, No.19, p.174-185, In German. 1 ref.
Peters, M.
Geologic structures, Logistics, Antarctica—New Schwabenland.
The report deals with the cooperation in the 1983/84 research season in an earth sciences program conducted jointly by the FRG and South Africa. Discussed are the preparation and beginning phase, logistics, geology of the work area, and preliminary results. Charts, maps and photographs are included.

39-1616
Bibliography of the glaciology and cryopedology in China and its adjacent districts (1820-1982).
Lanzhou Institute of Glaciology and Cryopedology, Gansu People's Publishing House, 1984, 208p., In Chinese, English and Russian.
Glaciology, Geocryology, Bibliographies, Permafrost, Frozen ground, Glacier surveys.

39-1617
Monte Carlo calculations of iceberg draft changes caused by roll.
Lewis, J.C., et al, *Cold regions science and technology*, Nov. 1984, 10(1), p.1-10, 15 refs.
Bennett, G.
Icebergs, Surface properties, Ice mechanics, Measurement, Models, Stability.

39-1618
Grounded rubble fields adjacent to offshore structures.
Sayed, M., et al, *Cold regions science and technology*, Nov. 1984, 10(1), p.11-17, 8 refs.
Frederking, R.M.W.
Grounded ice, Offshore structures, Floating ice, Artificial islands, Stresses, Surface properties.

39-1619
Drift of a number of idealized model icebergs.
Shirasawa, K., et al, *Cold regions science and technology*, Nov. 1984, 10(1), p.19-30, 15 refs.
Riggs, N.P., Muggeridge, D.B.
Icebergs, Drift, Ice mechanics, Mathematical models, Loads (forces).

39-1620
Laboratory studies on relationships between ice crystal size and flow rate.
Jacka, T.H., *Cold regions science and technology*, Nov. 1984, 10(1), p.31-42, 37 refs.
Ice crystal structure, Flow rate, Ice creep, Shear strain, Compressive properties, Strain tests, Crystal growth, Experimentation, Anisotropy.

39-1621
Laboratory experiments on frazil ice growth in supercooled water.
Ettema, R., et al, *Cold regions science and technology*, Nov. 1984, 10(1), p.43-58.
Karim, M.F., Kennedy, J.F.
Frazil ice, Ice growth, Supercooling, Water temperature, Nucleating agents, Ice formation, Turbulence, Mathematical models, Latent heat.

39-1622
On the critical angle for ocean waves entering shore fast ice.
Squire, V.A., *Cold regions science and technology*, Nov. 1984, 10(1), p.59-68, 8 refs.
Fast ice, Ocean waves, Ice elasticity, Ice mechanics, Sea ice, Mathematical models, Ice edge, Ice floes, Ice breakup.

39-1623
Physical model for predicting the thermal conductivity of brine-wetted snow.
Crocker, G.B., *Cold regions science and technology*, Nov. 1984, 10(1), p.69-74, 12 refs.
Snow composition, Snow cover effect, Snow ice interface, Thermal conductivity, Ice growth, Brines, Salinity, Snow density, Sea ice, Mathematical models, Ice cover thickness.

39-1624
Ice load prediction for Arctic nearshore zone.
Vivatrat, V., et al, *Cold regions science and technology*, Nov. 1984, 10(1), p.75-87, 20 refs.
Chen, V., Bruen, F.J.
Ice loads, Offshore structures, Shores, Ice mechanics, Rheology, Tests, Ice pressure, Compressive properties, Ice cover thickness, Ice structure, Velocity.

39-1625
Rigsby stage with remote computer compatible output.
Morgan, V.I., et al, *Cold regions science and technology*, Nov. 1984, 10(1), p.89-92, 2 refs.
Davis, E.R., Wehrle, E.
Ice crystal structure, Ice mechanics, Shear properties, Rheology, Glacier ice, Ice cores, Glacier beds, Electronic equipment, Measuring instruments.

39-1626
Discussion: Electromagnetic properties of sea ice by R.M. Morey, A. Kovacs and G.F.N. Cox.
Arcone, S.A., *Cold regions science and technology*, Nov. 1984, 10(1), MP 1821, p.93-94, For paper being discussed see 39-332 (MP 1776). 1 ref.
Ice electrical properties, Electromagnetic properties, Sea ice, Ice relaxation.

39-1627
Authors' response to discussion on: Electromagnetic properties of sea ice.
Morey, R.M., et al, *Cold regions science and technology*, Nov. 1984, 10(1), MP 1822, p.95-97, For original paper see 39-332 (MP 1776); for discussion by S.A. Arcone, see 39-1626 (MP 1821). 1 ref.
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Ice electrical properties, Electromagnetic properties, Sea ice, Ice relaxation, Electrical resistivity.

39-1628
Note on brine layer spacing of first-year sea ice.
Nakawo, M., et al, *Atmosphere-ocean*, June 1984, 22(2), p.193-206, With French summary. 20 refs.
Sinha, N.K.
Brines, Ice structure, Sea ice, Young ice, Ice growth, Ice conditions, Climatic factors, Ice crystal structure, Experimentation.

39-1629
Salient characteristics of soil-forming processes in Xizang (Tibet).
Gao, Y., et al, *Soil science*, Jan.-June 1983, Vol.135, p.11-17, 4 refs.
Chen, H.
Mountain soils, Frozen ground physics, Soil formation, Soil texture, Soil profiles, Freeze thaw cycles, China—Xizang Plateau.

39-1630
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Gould, J.E., Brzozowski, J.
Glacier ice, Surface temperature, Ice temperature, Glacier surfaces, Snow cover effect, Melting points, Firn, Air temperature, Seasonal variations, Mathematical models, Ice surface.

39-1631
Glacier and rock glaciers in Haut-Vallon du Loup (Haute-Ubaye, southern French Alps). [Glacier et glaciers rocheux dans le Haut-Vallon du Loup, (Haute-Ubaye, Alpes du Sud, France)],
Evin, M., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(1), p.27-41, In French with German and English summaries. 21 refs.
Assier, A.
Glacier surveys, Glacier melting, Rock glaciers, Meltwater, Water chemistry, Discontinuous permafrost, Temperature variations, Cirques, France—Alps.

39-1632
Climate change in East Africa: a numerical simulation from the 100 years of terminus record at Lewis Glacier, Mount Kenya.
Kruss, P., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(1), p.43-60, With German summary. 38 refs.
Glacier surveys, Mountain glaciers, Climatic changes, Precipitation (meteorology), Climatic effects, Albedo, Cloud cover, Kenya—Kenya Mountain.

39-1633
First experiences with the U.S. Geological Survey monopulse radio-echo-sounder in firn, ice and permafrost of the Swiss Alps. [Erste Erfahrungen mit dem U.S.-Geological-Survey-Monopuls-Radioecholot im Firn, Eis und Permafrost der schweizer Alpen],
Haeberli, W., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(1), p.61-72, For another source see 37-3703. 21 refs.
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Glacier surveys, Permafrost hydrology, Firn, Glacier thickness, Radio echo soundings, Ice cover thickness, Glacial deposits, Remote sensing, Alpine glaciation.

39-1634
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Jordan, E., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(1), p.73-102, In German with English and French summaries. Refs. p.99-102.
Mountain glaciers, Glacier surveys, Alpine glaciation, Volcanoes, Ecuador.

39-1635
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Fage, D.M., *Akademiia nauk SSSR. Doklady,* 1984, 278(5), p.1070-1074, In Russian. 9 refs.
Stefan problem, Analysis (mathematics).

39-1636
New data on the origin of ice-bearing loess in northern Yakutia and the Arctic mammoth dwelling environments during the Late Pleistocene. [Novye dannye o formirovanii lessovo-ledovykh tolshch severnoĭ IAkutii i usloviia obitaniia mamontovoĭ fauny v Arktike v pozdnem pleistotsene],
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Loess, Pleistocene, Frozen fines, Cryogenic structures, Edoma complex, Permafrost distribution, Permafrost structure, Permafrost origin.

39-1637
Cryosphere as a water-exchange system. [Kriosfera kak vodoobmennaia sistema],
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Permafrost origin, Permafrost hydrology, Permafrost structure, Moisture transfer, Theories, Terminology.

39-1638
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Mountain soils, Organic soils, Soil composition, Soil profiles, Alpine landscapes, Landscape types.

39-1639
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Smirnov, E.A., et al, *Hydrotechnical construction,* Jan. 84 (Publ. July 84), 18(7), p.25-29, Translated from *Gidrotekhnicheskoe stroitel'stvo.* 6 refs.
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Ice cover thickness, Channels (waterways), Snowstorms, Blowing snow, Hydraulic structures, Slush, Ice formation, Ice jams.

39-1640
Structural solutions of wind-energy installations. [Nekotorye konstruktivnye resheniia vetroenergeticheskikh ustanovok],
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39-1641
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Bystrykh, V.F., Orzhekhovskiĭ, IU.R., Orzhekhovskaia, R.IA.
Taiga, Boreholes, Foundations, Paludification, Piles, Subarctic landscapes, Permafrost distribution, USSR—Tyumen'.

39-1642
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Fedorov, G.A., *Transportnoe stroitel'stvo,* Dec. 1984, No.12, p.13-15, In Russian. 3 refs.
Tunnels, Linings, Artificial freezing, Waterproofing, Excavation, Tunneling, Construction equipment.

39-1643
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Kuntsevich, O.V., *Transportnoe stroitel'stvo,* Dec. 1984, No.12, p.25-26, In Russian.
Concretes, Concrete admixtures, Antifreezes, Frost resistance, Concrete freezing, Concrete hardening.

39-1644
Isolation and growth of psychrophilic diatoms from the ice-edge in the Bering Sea.
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O'Donnell, R.
Plankton, Ice edge, Microbiology, Marine biology, Algae, Growth, Bering Sea.

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Winter maintenance, Markers, Snow removal, Road maintenance, Reflectivity, Tests.

39-1646
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Chemical ice prevention, Brines, Pavements, Bituminous concretes, Freeze thaw cycles, Snow removal, Ice control, Degradation, Compressive properties, Corrosion, Tests.

39-1647
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Ice strength, Grain size, Fracturing, Tensile properties, Ice cracks, Temperature effects.

39-1648
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Cheung, F.B.
Fluid flow, Freeze thaw cycles, Liquid solid interfaces, Ice surface, Phase transformations, Ice water interface, Temperature distribution, Pipe flow, Stefan problem.

39-1649
Two-dimensional ice-type vertex model with two types of staggered sites. I. The free energy and polarization.
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Ice physics, Phase transformations, Mathematical models.

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39-1651
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39-1652
Resistance of frozen soils to disintegration under high-pressure hydraulic jets.
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Earthwork, Hydraulic jets, Frozen ground strength, Excavation, Permafrost.

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Ice shelves, Glacial erosion, Continental shelves, Geomorphology.

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Paleoclimatology, Glacier alimentation, Coastal topographic features, Ablation, Glaciation, Sea ice distribution, Mass balance, Subpolar regions, Ocean environments, Ice cover thickness, Ice growth, Marine geology, Bering Sea.

39-1655
Predictions as to the recovery of the vegetation cover destroyed by human activities in the north of western Siberia.
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Soil erosion, Tundra, Forest tundra, Taiga, Swamps, Revegetation, Subarctic landscapes, Economic development, Human factors.

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Formation of monodisperse lead aerosols and identification of particle number concentration by ice nucleation.
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Aerosols, Lead iodide, Ice nuclei, Air pollution, Temperature effects, Experimentation.

39-1657
Tensile strength of ice as a function of grain size.
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Snow melting, Snow pellets, Snowflakes, Snow density, Humidity, Air temperature, Freezing points.

39-1659
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Snow composition, Precipitation (meteorology), Atmospheric composition, Bottom sediment, Rain, Limnology, Organic particle composites.

39-1660
Size-segregated measurements of particulate elemental carbon and aerosol light absorption at remote Arctic locations.
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Haze, Aerosols, Radiation absorption, Light (visible radiation), Light scattering, Air pollution, Photometry, Albedo, Seasonal variations.

39-1661
Radiative properties of the Arctic aerosol.
Patterson, E.M., et al, *Atmospheric environment*, 1982, 16(12), p.2967-2977, 32 refs.
Marshall, B.T., Rahn, K.A.
Aerosols, Haze, Radiation absorption, Light scattering, Humidity, Optical properties, Air pollution, Seasonal variations, United States—Alaska—Barrow.

39-1662
In-depth study of snow fences.
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Furnish, R.P.
Snow fences, Snow accumulation, Snow removal, Ice removal, Cost analysis, Countermeasures, Safety.

39-1663
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Snowstorms, Winter maintenance, Road maintenance, Bridges, Snow removal, Ice removal, Cost analysis, Monitors.

39-1664
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Winter maintenance, Road maintenance, Snow removal, Ice removal.

39-1665
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Myers, J.N.
Weather forecasting, Snow removal, Snow accumulation, Countermeasures.

39-1666
Determination of thermal diffusivity of solid materials near the melting point.
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Ice thermal properties, Melting points, Thermal diffusion, Liquid solid interfaces, Metals, Mathematical models.

39-1667
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Ocean environments, Oceanographic surveys, Ice navigation, Acoustic measurement, Sounding, Sound transmission.

39-1668
Basal sliding relations deduced from ice-sheet data.
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Smith, G.D., Boulton, G.S.
Ice sheets, Basal sliding, Ice mechanics, Ice pressure, Friction, Ice thermal properties, Greenland, Canada—Northwest Territories—Devon Island.

39-1669
Reconstruction of former ice sheets and their mass balance characteristics using a non-linearly viscous flow model.
Boulton, G.S., et al, *Journal of glaciology*, 1984, 30(105), p.140-152, 28 refs., French and German summaries.
Smith, G.D., Morland, L.W.
Ice sheets, Mass balance, Glacial geology, Paleoclimatology, Ice mechanics, Ice models.

39-1670
Ice dynamics and thermal regime of Taylor Glacier, south Victoria Land, Antarctica.
Robinson, P.H., *Journal of glaciology*, 1984, 30(105), p.153-160, 30 refs., French and German summaries.
Glacier mass balance, Glacier heat balance, Ice mechanics, Antarctica—Taylor Glacier.
Glaciological data collected from Taylor Glacier have been used to assess aspects of the dynamics and thermal regime of the glacier. Mass-balance studies suggest that the glacier is in near equilibrium. The thermal condition of the basal ice over much of the ablation area was calculated from estimates of the geothermal heat influx and measurements of near-surface ice temperatures, ice velocities, and ice thickness. It was found that, in as much as 50% of the lower ablation area, the basal ice may be melting. (Auth.)

39-1671
Glaciological and oceanographic calculations of the mass balance and oxygen isotope ratio of a melting ice shelf.
Potter, J.R., et al, *Journal of glaciology*, 1984, 30(105), p.161-170, 20 refs., French and German summaries.
Paren, J.G., Loynes, J.
Ice shelves, Ice melting, Mass balance, Oxygen isotopes, Antarctica—George VI Ice Shelf.
Glaciological estimates of the ice supply to George VI Ice Shelf are obtained by integrating the accumulation over the catchment. The basal melt rates for the ice shelf are calculated by balancing the accumulation with calving and melting. We calculate an average equilibrium melt rate for the ice shelf of 2 m/a. The mean oxygen isotope composition of recent accumulation on the catchment is determined by using accumulation and isotope data, supplemented by temperature measurements and a close empirical relationship between isotope ratio and temperature. The catchment has a mean isotope ratio of -20.8 per mill relative to SMOW. Sea-water under the ice shelf at the north of George VI Sound is Warm Deep Water modified by melting ice. The melting ice has an isotope ratio of -20.3 per mill. Good agreement in isotope ratios suggests that the melting ice is from the catchment and because the basal ice of George VI Ice Shelf represents accumulation over the last few millennia the implication is that there has been no systematic change in the isotope composition of the accumulation during this period. (Auth.)

39-1672
Relationship between bore-hole closure and crystal fabrics in antarctic ice core from Cape Folger.
Thwaites, R.J., et al, *Journal of glaciology*, 1984, 30(105), p.171-179, 15 refs., French and German summaries.
Wilson, C.J.L., McCray, A.P.
Ice cores, Ice crystal structure, Ice mechanics, Strains, Ice deformation, Antarctica—Folger, Cape.
Two holes, over 300 m deep underwent considerable closure below 250 m. The closure observed in the holes was non-uniform and occurred in zones 0.5 to 3 m wide. High-closure zones are characterized by interlocking and irregular-shaped ice grains with many sub-horizontal *c*-axes and only occasional *c*-axis clusters at a high angle to the flow plane. Low-closure zones contain tabular grains with the long dimension parallel to the flow plane, abundant deformation features and a predominance of *c*-axes oriented at a high angle to the flow plane. The relationship between closure rate and *c*-axis fabric is attributed to marked plastic flow by intracrystalline slip on the basal plane to produce higher closure in areas where there is a greater variation in *c*-axis orientation. This deformation is attributable to overburden pressure and hence is related to depth, and is independent of shear within the main body of the ice mass. (Auth.)

39-1673
On the role of mechanical energy in maintaining subglacial water conduits at atmospheric pressure.
Hooke, R.L., *Journal of glaciology*, 1984, 30(105), p.180-187, 22 refs., French and German summaries.
Glacial hydrology, Subglacial drainage, Channels (waterways), Atmospheric pressure.

39-1674
Relationships between synoptic-scale atmospheric circulation and glacier mass balance in south-western Canada during the International Hydrological Decade, 1965-74.
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Glacier mass balance, Atmospheric circulation, Synoptic meteorology, Canada—Alberta—Peyto Glacier, Canada—British Columbia—Sentinel Glacier.

39-1675
Use of hypsometry to indicate long-term stability and response of valley glaciers to changes in mass transfer.
Furbish, D.J., et al, *Journal of glaciology*, 1984, 30(105), p.199-211, 34 refs., French and German summaries.
Andrews, J.T.
Glacier mass balance, Height finding.

39-1676
Terminus response of Lewis Glacier, Mount Kenya, Kenya, to sinusoidal net-balance forcing.
Kruss, P., *Journal of glaciology*, 1984, 30(105), p.212-217, 26 refs., French and German summaries.
Glacier mass balance, Climatic changes, Altitude, Kenya—Lewis Glacier.

39-1677
Rates and mechanisms of iceberg ablation in the d'Urville Sea, southern ocean.
Keys, J.R., et al, *Journal of glaciology*, 1984, 30(105), p.218-222, 14 refs., French and German summaries.
Williams, K.L.
Icebergs, Ablation, Ice melting.
Wave action causes ablation in a narrow zone around an iceberg's waterline, at up to 0.3 m per day, in water of -1C with waves up to 0.4 m high. Subsequent subaerial calving of ice from iceberg sides takes place up to a similar rate. Submarine melting is an order of magnitude slower than wave action but acts over the largest part of an iceberg. Ablation rates derived theoretically or statistically elsewhere for comparable environmental conditions, are in reasonable agreement with those measured here. Drifting icebergs trail a plume of mixed, slightly cooled and diluted sea-water in their wake. (Auth.)

39-1678
Model investigation of interannual sea-ice variability in the Beaufort Sea.
Ross, B., *Journal of glaciology*, 1984, 30(105), p.223-226, 11 refs., French and German summaries.
Sea ice, Ice cover thickness, Seasonal variations, Ice models.

39-1679
Interaction of Stokes' edge waves with near-shore ice formation.
Shaw, R.P., et al, *Journal of glaciology*, 1984, 30(105), p.227-229, 11 refs., French and German summaries.
Rumer, R.R.
Sea ice, Ocean waves, Ice formation.

39-1680
Field study of rough shore-fast sea ice.
Hanley, T.O., *Journal of glaciology*, 1984, 30(105), p.230-234, 9 refs., French and German summaries.
Sea ice, Fast ice, Ice surface, Surface roughness.

39-1681
Shock-wave studies of ice under uniaxial strain conditions.
Larson, D.B., *Journal of glaciology*, 1984, 30(105), p.235-240, 14 refs., French and German summaries.
High pressure ice, Strains, Shock waves, Projectile penetration.

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Clasts with stoss-lee form in lodgement tills: a discussion.
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Glacial till, Glacial erosion, Rocks, Moraines.

39-1683
PICO lightweight coring auger.
Koci, B.R., et al, *Journal of glaciology*, 1984, 30(105), p.244-245, French and German summaries., Also in: Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.601-607.
Kuivinen, K.C.
Ice drills, Instruments.
A new lightweight hand-operated coring auger for use in firn or ice is described. Extensive use of glass-epoxy composites contributes to a drill weight of approximately 1 kg/m in 20 m and 50 m configurations. (Auth.)

39-1684
Procedure for testing polycrystalline ice in uniaxial tension.
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Currier, J.H., Lim, P.N., Schulson, E.M.
Cold weather tests, Ice crystals, Ice mechanics, Strains.

39-1685
Thin sectioning and surface replication of ice at low temperature.
Daley, M.A., et al, *Journal of glaciology*, 1984, 30(105), p.248-250, 4 refs., French and German summaries.
Kirby, S.H.
Thin sections, Ice deformation, Low temperature tests, Ice crystal replicas, Photography.

39-1686
Milne Glacier, northern Ellesmere Island, N.W.T., Canada: a surging glacier?.
Jeffries, M.O., *Journal of glaciology*, 1984, 30(105), p.251-253, 11 refs., French and German summaries.
Glacier surges, Periodic variations, Canada—Northwest Territories—Ellesmere Island, Canada—Northwest Territories—Milne Glacier.

39-1687
Use of aerial and satellite information in studying continental waters. [Ispol'zovanie aerokosmicheskoĭ informatsii v issledovaniiakh vod sushi],
Usachev, V.F., ed, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, 125p., In Russian. For selected papers see 39-1688 through 39-1697. Refs. passim.
Taliks, Lake ice, Airborne radar, Spaceborne photography, Snow cover distribution, Naleds, Alpine glaciation, Snow line, Infrared photography, Runoff, Glacial hydrology, Ice cover thickness, Permafrost beneath rivers, Rivers, Snowmelt, Permafrost hydrology.

39-1688
Satellite indication of the zones of river runoff formation and its use in Central Asia. [Kosmicheskaia indikatsiia zon formirovaniia i ispol'zovaniia stoka rek Sredneĭ Azii],
Sumarokova, V.V., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, p.3-11, In Russian. 16 refs.
Glacial hydrology, Geobotanical interpretation, Snow cover distribution, Snow water equivalent, Spaceborne photography, Alpine glaciation, Photointerpretation, Vegetation patterns.

39-1689
Determining the dates of snow cover formation and disappearance from satellite photographs of the Stanovoy Highlands. [Opredelenie srokov obrazovaniia i skhoda snezhnogo pokrova v gorakh po s"emkam s iskusstvennykh sputnikov zemli (na primere Stanovogo nagor'ia)],
Prokacheva, V.G., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, p.20-28, In Russian. 3 refs.
Chmutova, N.P.
Spaceborne photography, Photointerpretation, Snow cover distribution, Snow line, Altitude, Seasonal variations.

39-1690
Peculiarities of snow melting near industrial centers and the possibility of observing this process by remote sensing. [Ob osobennostiakh snegotaianiia vblizi promyshlennykh tsentrov i vozmozhnostiakh nabliudeniia etogo protsessa distantsionnymi sredstvami],
Prokacheva, V.G., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, p.28-36, In Russian. 11 refs.
Usachev, V.F.
Spaceborne photography, Snow cover distribution, Snow melting, Photointerpretation, Industrial buildings, Tundra.

39-1691
Spatial distribution of ice cover thickness on Lake Ladoga according to radar data. [Kharakteristika prostranstvennogo raspredeleniia tolshchiny l'da na Ladozhskom ozere po materialam radiolokatsionnoĭ aeros"emki],
Chizhov, A.N., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, p.36-47, In Russian. 4 refs.
Borodulin, V.V.
Lake ice, Ice cover thickness, Radar echoes, Airborne radar.

39-1692
Terminology of ice formations for use in ice-surveying of large lakes. [O nomenklature ledianykh obrazovaniĭ dlia ledovykh aviarazvedok na krupnykh ozerakh],
Chizhov, A.N., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, p.47-51, In Russian. 2 refs.
Borodulin, V.V.
Ice surveys, Terminology, Lake ice, Ice formation, Ice cover thickness.

39-1693
Using satellite information for determining ice conditions on the Zeya reservoir. [Ispol'zovanie sputnikovoĭ informatsii dlia opredeleniia ledovogo sostoianiia Zeĭskogo vodokhranilishcha],
Desiatova, G.I., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, p.51-54, In Russian.
Marchenko, I.A.
Spaceborne photography, Lake ice, Ice formation, Ice surveys, Ice reporting, Icebound lakes, Ice breakup.

39-1694
Possibility of using television photographs from the "Meteor" satellite, for establishing types of riverbed processes. [Vozmozhnosti ispol'zovaniia televizionnykh snimkov s ISZ "Meteor" dlia otsenki tipov ruslovogo protsessa],
Snishchenko, D.V., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, p.55-59, In Russian. 2 refs.
Ice conditions, Spaceborne photography, Permafrost beneath rivers, Photointerpretation, Rivers.

39-1695
Spread of naled ice beyond the bed as a typical process of rivers in the BAM zone. [Naledniaia mnogorukavnost' kak kharakternyĭ tip ruslovogo protsessa na rekakh zony BAMa],
Snishchenko, D.V., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, p.59-63, In Russian. 3 refs.
River basins, Permafrost beneath rivers, Taliks, Permafrost hydrology, Naleds, Ice formation, Baykal Amur railroad, USSR—Sakukan River.

39-1696
Identifying the boundaries of ground-water naleds on aerial photographs. [Deshifrirovanie granits naledeĭ podzemnykh vod na aerofotosnimkakh],
Griazeva, L.I., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol 299, p.63-73, In Russian. 10 refs.
Chmutov, A.M.
Spaceborne photography, Photointerpretation, Naleds, Permafrost hydrology, Ground water.

39-1697
Identifying naleds on multizonal aerial photographs. [Deshifrirovanie naledeĭ po materialam mnogozonal'noĭ aerofotos"emki],
Abakumenko, A.E., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.299, p.73-80, In Russian. 7 refs.
Aerial surveys, Photointerpretation, Naleds, Infrared photography, Permafrost distribution, Permafrost hydrology.

39-1698
Snow physics, avalanches, glacial mudflows. [Fizika snega, laviny, seli],
Zalikhanov, M.Ch., ed, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, 160p., In Russian. For selected papers see 39-1699 through 39-1711. Refs. passim.
Snow physics, Avalanche formation, Avalanche triggering, Glacier ice, Ice composition, Environmental protection, Mining, Pollution, Environmental impact, Snow strength, Sampling, Mechanical tests, Snow compression.

39-1699
Present state and prospects of studying snow avalanches in the USSR. [Sostoianie i perspektivy issledovaniia snezhnykh lavin v SSSR],
Zalikhanov, M.Ch., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.3-11, In Russian. 19 refs.
Runich, A.V.
Avalanche formation, Metamorphism (snow), Snow cover stability, Avalanche triggering, Snow physics, Avalanche mechanics, Snow depth, Heat transfer, Phase transformations, Snow density.

39-1700
Simplified nonstationary univariate hydraulic model for calculating snow avalanche movement. [Uproshchennaia nestatsionarnaia odnomernaia gidravlicheskaia model' rascheta kharakteristik dvizheniia snezhnykh lavin],
Temukuev, Kh.M., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.12-21, In Russian. 12 refs.
Kalazhokov, Kh.Kh.
Avalanche mechanics, Avalanche modeling, Avalanche engineering, Mathematical models.

39-1701
Avalanche danger in valleys of the rivers Mamison-Don and Zakki-Don. [Lavinnaia opasnost' dolin rek Mamison-don i Zakki-don],
Baulina, L.L., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.21-27, In Russian. 2 refs.
Avalanche engineering, Charts, River basins, Valleys, Roads, Railroads, USSR—Caucasus.

39-1702
Results of counteracting avalanche formation processes in the area of construction of the Transcaucasian highway at the Rokskiy mountain pass. [Nekotorye rezul'taty aktivnogo vozdeĭstviia na lavinnye protsessy v raĭone stroiteĭstva Transkavkazskoĭ avtomagistrali po Rokskomu perevalu],
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Zalikhanov, M.Ch., Zykov, V.V., Korolev, A.I.
Avalanche engineering, Avalanche formation, Avalanche triggering, Roads.

39-1703
Engineering protection of the Transcaucasian highway from snow avalanches at the Rokskiy mountain pass. [Problemy inzhenernoĭ zaschity ot snezhnykh lavin trassy Transkavkazskoĭ avtodorogi cherez Rokskiĭ pereval],
Zalikhanov, M.Ch., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.30-33, In Russian. 3 refs.
Runich, A.V.
Avalanche engineering, Tunnels, Valleys, Snow retention, Roads, Concrete structures.

39-1704
Studying the process of snow sample deformation under the pressure of a die through an elastic element. [Issledovanie protsessa deformirovaniia snezhnogo obraztsa zhestkim shtampom cherez uprugiĭ element],
Kariakin, A.T., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.34-37, In Russian. 2 refs.
Davydkin, A.D., Zalikhanov, M.Ch., Urumbaev, N.A.
Sampling, Snow compression, Avalanche engineering, Snow physics, Snow strength, Snow deformation, Mechanical tests.

39-1705
Dynamics of snow cover in the Zakki-Don River valley. [Dinamika snezhnogo pokrova v doline r. Zakki-don],
Baulina, L.L., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.37-41, In Russian. 2 refs.
Potapov, S.V.
Snow surveys, Avalanche engineering, Valleys, Snow strength, Dynamic properties, Dynamic loads, USSR—Caucasus.

39-1706
Ultra-high-frequency measurements of snowfall intensity. [SVCh-radiometricheskie izmereniia intensivnosti snegopadov],
Bolov, V.R., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.41-45, In Russian. 3 refs.
Karmov, Kh.N.
Snowstorms, Snowfall, Telemetering equipment, Snow accumulation, Snow cover stability, Snow physics, Avalanche formation.

39-1707
Scheme for active intervention at the source of glacial mudflows. [Printsipial'naia skhema metoda aktivnogo vozdeĭstviia v ochagakh seleformirovaniia],
Bolov, V.R., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.74-77, In Russian.
Mudflows, Slope processes, Slope protection, Dams, Countermeasures, Alpine landscapes.

39-1708
Infiltration parameters in the Gerkhozhansu mudflow basin (northern Caucasus). [Infil'tratsionnye parametry selevogo basseĭna Gerkhozhansu (Severnyĭ Kavkaz)],
Moskalev, E.I., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.77-84, In Russian. 5 refs.
Rubtsov, E.A.
Mudflows, Mountain soils, Organic soils, Cryogenic soils, Peat, Podsol, Porosity, Landscape types, Permeability, Vegetation factors.

39-1709
Ecologic relations of Subalpine soils in the Elbrus Mountain area under natural conditions and in areas of human activities. [Nekotorye ekologicheskie sviazi subal'piiskikh pochv Priel'brus'ia v estestvennykh usloviiakh i pri antropogennom vozdeĭstviĭ].
Razumov, V.V., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.109-121, In Russian. 6 refs.
Forest soils, Mountain soils, Cryogenic soils, Soil formation, Environmental protection, Human factors, Alpine landscapes, Soil pollution, Landscape types.

39-1710
Preliminary estimation of the impact of industries on highland ecosystems. [Predvaritel'naia otsenka tekhnogennogo vozdeĭstviia na srednegornye ekosistemy].
Razumov, V.V., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.121-134, In Russian. 13 refs.
Tsepkova, N.L.
Mountain soils, Human factors, Soil erosion, Plant ecology, Ecosystems, Revegetation, Environmental impact, Mining, Tailings.

39-1711
Methods and some results of studying the pollution of seasonal ice layers in Elbrus glaciers. [Metodika i nekotorye rezul'taty issledovaniia zagriazneniia sezonnykh nasloenii lednikov Priel'brus'iia].
Zalikhanov, M.Ch., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1984, Vol.54, p.134-144, In Russian. 17 refs.
Glacier ice, Glacier alimentation, Precipitation (meteorology), Air pollution, Water composition, Ice composition.

39-1712
Experimental investigation of potential icing of the space shuttle external tank.
Ferrick, M.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1982, CR 82-25, 305p. ADA-121 330.
Itagaki, K., Lemieux, G.E., Minas, S.E.
Aircraft icing, Tanks (containers), Spacecraft, Protective coatings, Thermal insulation, Ice formation, Countermeasures, Surface temperature, Statistical analysis, Experimentation.
The thermal protection system tiles on the space shuttle Orbiter are extremely sensitive to impact damage. Such impacts could be caused by ice particles dislodged from the outer surface of the external tank (ET) during the launch. The ET, which contains the cryogenic propellant tanks, is covered with a spray-on foam insulation (SOFI) to minimize ice formation. The objective of this investigation was to experimentally explore a range of environmental conditions for which significant icing potential exists for the ET. A significant finding, which became evident early in the experimental program, was that computer models based upon the average SOFI thickness predicted panel surface temperatures that were considerably higher than those observed. For an assessment of icing, the important values to characterize the SOFI are the minimum thickness and range of thickness. Dense ice formation occurred most readily when a small portion of the total surface area had a temperature below freezing.

39-1713
Documentation and preliminary validation of H2OTRANS and DAYTRANS, two models for predicting transpiration and water stress in western coniferous forests.
Running, S.W., *U.S. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. U.S. Forest Service research paper*, Apr. 1984, FSRP-RM-252, 52p., PB84-220 706, Refs. p.22-24.
Forestry, Snowmelt, Transpiration, Precipitation (meteorology), Stresses, Soil water, Evaporation, Mathematical models, Computer programs, Trees (plants), Litter.

39-1714
Genetic variation in blue spruce: a test of populations in Nebraska.
Van Haverbeke, D.F., *U.S. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. U.S. Forest Service research paper*, July 17, 1984. FSRP-RM-253, 12p., PB84-220 680, 17 refs.
Forestry, Frost action, Cold tolerance, Vegetation, Trees (plants).

39-1715
Simple model for the depolarizing effects of rain and ice on earth-satellite links in the 10 to 30 GHz frequency range.
Runyon, D.L., Jr., et al, *Virginia Polytechnic Institute and State University, Blacksburg. Electrical Engineering Department. Satellite Communications Group. Report*, June 1983, VPISU/EE/SATCM-83/3, 299p., PB83-237 297, Refs. p.294-299.
Stutzman, W.L.
Ice cover effect, Icing, Spacecraft, Polarization (waves), Microwaves, Atmospheric attenuation, Telecommunication, Computer programs, Mathematical models, Rain.

39-1716
Offshore concrete structures in the Arctic: research needs.
Carino, N.J., *U.S. National Bureau of Standards. Technical note*, Apr. 1984, NBS/TN-1192, 56p., PB84-218 353, 24 refs.
Offshore structures, Concrete structures, Cold weather construction, Design, Construction materials, Engineering, Beaufort Sea.

39-1717
Proceedings of a workshop on the properties of snow, 8-10 April 1981, Snowbird, Utah.
Brown, R.L., ed, *U.S. Army Cold Regions Research and Engineering Laboratory*, 1982, SR 82-18, 135p., ADA-120 517, Refs. passim. For individual papers see 36-2530 through 36-2535 and 39-1718. Includes committee chairmen's reports.
Colbeck, S.C., ed, Yong, R.N., ed.
Snow physics, Snow surveys, Metamorphism (snow), Snow mechanics, Snow accumulation, Snow optics, Snow electrical properties.

39-1718
Dielectric properties of snow.
Stiles, W.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, 1982, No.82-18, Workshop on the Properties of Snow, Snowbird, Utah, April 8-10, 1981. Proceedings, p.91-103, ADA-120 517, 37 refs.
Ulaby, F.T.
Snow electrical properties, Radio waves, Dielectric properties, Unfrozen water content, Microwaves, Snow physics.

39-1719
Transport of water in frozen soil: 5, Method for measuring the vapor diffusivity when ice is absent.
Nakano, Y., et al, *Advances in water resources*, Dec. 1984, Vol.7, MP 1819, p.172-179, 12 refs.
Tice, A.R., Jenkins, T.F.
Frozen ground, Soil water migration, Water transport, Vapor diffusion, Experimentation.
A new experimental method is introduced for determining the relative magnitudes of liquid and vapor diffusion by using a small amount of soluble chemical as a tracer. The theoretical justification of the method is presented for the case where ice is absent. The feasibility of the method is demonstrated by an experiment using marine-deposited clay.

39-1720
Digital processing of passive K(a)-band microwave images for sea-ice classification.
Eppler, D.T., et al, *U.S. Naval Ocean Research and Development Activity. Report*, May 1984, NORDA-51, 54p., 33 refs.
Farmer, L.D., Lohanick, A.W., Hoover, M.
Sea ice, Remote sensing, Microwaves, Radiometry, Classifications, Aerial surveys, Beaufort Sea.

39-1721
Temperature measurements in permafrost.
Osterkamp, T.E., *U.S. Federal Highway Administration. Report*, Jan. 1984, FHWA-AK-RD-85-11, 87p., Refs. p.78-80.
Alaska. Department of Transportation and Public Facilities.
Permafrost thermal properties, Frozen ground temperature, Boreholes, Freezing points, Heat transfer, Thermistors, Temperature measurement, Drilling, Temperature gradients.

39-1722
Measuring the liquid water content of snow. [Mesure de la teneur en eau liquide de la neige].
Marbouty, D., et al, *France. Direction de la Météorologie. Etablissement d'Etudes et de Recherches Météorologiques. Note de travail*, Jan. 1985, No.112, 30p., In French. 11 refs.
Le Masson, M.
Snow water content, Snow electrical properties, Unfrozen water content, Heat measurement, Dielectric properties, Analysis (mathematics), Measuring instruments.

39-1723
Rain/snow impact erosion of high velocity projectile.
Hong, Y.S., *Korean Society of Aeronautics and Space Science. Journal*, 1980, 8(1), p.2-8, In Korean with English summary. 9 refs.
Corrosion, Airplanes, Snow, Heat transfer, Erosion, Rain, Velocity, Time factor, Countermeasures.

39-1724
Equipment for frost heave tests: friction between plastic and soil.
Admasie, D., et al, *Sweden. Statens väg- och trafikinstitut. Meddelande*, 1982, No.320 A, 6p., With Swedish summary. 1 ref.
Stenberg, L.
Frost heave, Measuring instruments, Frozen ground mechanics, Friction, Soil freezing, Soil pressure, Plastics, Soil water, Water content, Tests.

39-1725
International pipelines.
Hale, D., *Pipeline and gas journal*, Oct. 1984, 211(12), p.16-18.
Pipe laying, Permafrost beneath structures, Gas pipelines, Trenching, Transportation.

39-1726
Offshore drilling boom expanding in Alaska. *Offshore*, Jan 1985, 45(1), p.64-66.
Offshore drilling, Offshore structures, Artificial islands, Bering Sea.

39-1727
Subsea permafrost in Harrison Bay, Alaska: an interpretation from seismic data.
Neave, K.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1982, CR 82-24, 62p., ADA-121 020, 16 refs.
Sellmann, P.V.
Subsea permafrost, Seismic surveys, Bottom sediment, Seismic refraction, Seismology, Natural resources, Ocean bottom, United States—Alaska—Harrison Bay.
Velocity data derived from petroleum industry seismic records from Harrison Bay show that high-velocity material (>2km s) interpreted to be ice-bonded permafrost is common. In the eastern part of the bay, the depth to high velocity material increases and velocity decreases in an orderly manner with increasing distance from shore until the layer is no longer apparent. The western part of the bay is less orderly, possibly reflecting a different geological and thermal history. This western part may be an inundated section of the low coastal plain characterized by the region north of Teshekpuk Lake, and could have contained deep thaw lakes, creating low velocity zones. Along some seismic lines, the high-velocity material extends approximately 25 km offshore.

39-1728
On the differences in ablation seasons of Arctic and Antarctic sea ice.
Andreas, E.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1982, CR 82-33, 9p., ADA-122 454, 41 refs. For another source see 36-2836 (MP 1517).
Ackley, S.F.
Sea ice, Ice melting, Ablation, Meteorological factors, Ice conditions.
Arctic sea ice is freckled with melt ponds during the ablation season; Antarctic sea ice has few, if any. On the basis of a simple surface heat budget, we investigate the meteorological conditions necessary for the onset of surface melting in an attempt to explain these observations. The low relative humidity associated with the relatively dry winds off the continent and an effective radiation parameter smaller than that characteristic of the Arctic are primarily responsible for the absence of melt features in the Antarctic. Together these require a surface-layer air temperature above 0 C before Antarctic sea ice can melt. A ratio of the bulk transfer coefficients C(H)/C(E) less than 1 also contributes to the dissimilarity in Arctic and Antarctic ablation seasons. The effects of wind speed and of the sea-ice roughness on the absolute values of C(H) and C(E) seem to moderate regional differences, but final assessment of this hypothesis awaits better data, especially from the Antarctic.

39-1729
Suppression of ice fog from the Fort Wainwright, Alaska, cooling pond.
Walker, K.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1982, SR 82-22, 34p., ADA-123 069, 28 refs.
Brunner, W.
Ice fog, Visibility, Countermeasures, Ponds, Cooling systems, Air temperature, Vehicles, Accidents.
Ice fog near the Ft. Wainwright cooling pond creates a visibility hazard. Observations show a substantial reduction in visibility along both private and public roadways in the path of the cooling pond's ice fog plume. This reduction in visibility increases as the ambient air temperature decreases. Visibility was less than 215 m (700 ft) on the Richardson Highway on the average of 8 days for each of the 3 data years. Data collected during the winters of 1979-80, 1980-81 and 1981-82 statistically show that use of a monomolecular film evaporation suppressant, hexadecanol, on the pond to reduce ice fog is ineffective. There

is an immediate need for a driver warning system when visibility is affected by the ice fog.

39-1730
Developing a water well for the ice backfilling of DYE-2.
Rand, J.H., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1982, SR 82-32, 19p., ADA-125 503, 11 refs.
Water supply, Ice melting, Wells, Logistics, Greenland.
One proposal to extend the useful life of DEW Line Ice Cap Station DYE-2 is to backfill the lower 50 feet of the truss enclosure with ice. This report discusses a method by which 2.8 million gallons of water would be collected and stored by melting ice. Also included is a description of required components, their costs and the logistical requirements to establish such a system.

39-1731
Frozen precipitation and concurrent weather: a case study for Munchen/Riem, West Germany.
Bilello, M.A., *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1984, SR 84-32, 47p., ADA-149 227, 29 refs.
Weather forecasting, Snowfall, Meteorological data, Military operation, Precipitation (meteorology), Visibility, Freezing, Rain, Winter, Climate, Germany—Munich.
This study evaluates statistical data for two or more meteorological parameters, recorded concurrently, to improve prediction of atmospheric conditions that would obscure a winter battlefield. The analysis considers only freezing precipitation types that were categorized and correlated with simultaneously observed weather conditions, such as temperature, humidity and visibility, using 11 years of winter weather records for Munchen/Riem, Federal Republic of Germany. These results are an example of the unusual and essential environmental information that can be derived from available records. It is suggested that similar investigations should be conducted for other sites in central Europe.

39-1732
Comparative energy balance study for Arctic tundra, sea surface, glaciers and boreal forests.
Ohmura, A., *Geo Journal*, 1984, 8(3), p.221-228, 29 refs.
Tundra, Glacier heat balance, Snow cover effect, Thermodynamics, Heat balance, Oceanography, Boundary layer, Forestry, Solar radiation, Heat flux, Seasonal variations.

39-1733
Glacierkarst phenomena in Spitsbergen.
Pulina, M., *Norsk geografisk tidsskrift*, Nov. 1984, 38(3-4), p.163-168, 2 refs.
Thermokarst, Subglacial caves, Glacial hydrology, Meltwater, Moraines, Subglacial drainage, Norway—Spitsbergen.

39-1734
Thermal protection system for the space shuttle external tank.
Ronquillo, L., et al, *Journal of thermal insulation*, Jan. 1984, Vol.7, p.228-250.
Williams, C.
Thermal insulation, Icing, Spacecraft, Ice control, Countermeasures.

39-1735
Ice crystals grown in an unforced air flow cloud chamber.
Yamashita, A., et al, *Meteorological Society of Japan. Journal*, Feb. 1984, 62(1), p.135-139, With Japanese summary. 6 refs.
Ohno, T.
Ice crystal growth, Cloud chambers, Air flow, Supercooling, Snow crystal structure, Temperature effects.

39-1736
Morphology of ice crystals grown from the vapour at temperatures between -4 and -1.5C.
Yamashita, A., et al, *Meteorologicaly Society of Japan. Journal*, Feb. 1984, 62(1), p.140-145, With Japanese summary. 12 refs.
Asano, A.
Ice crystal structure, Water vapor, Cloud chambers, Air flow, Melting points, Ice crystal growth, Temperature effects.

39-1737
Initial growth forms of snow crystals growing from frozen cloud droplets.
Yamazaki, G., et al, *Meteorological Society of Japan. Journal*, Feb. 1984, 62(1), p.190-192, 9 refs.
Yamazaki, T.
Snow crystal structure, Snow crystal growth, Freezing, Cloud droplets, Ice crystal growth, Temperature effects.

39-1738
Salt and spreaders: dynamic duo battles snow and ice.
Public works, Sep. 1984, 115(9), p.114-115.
Snow removal, Ice removal, Winter maintenance, Road maintenance, Salting, Ice control, Road icing, Equipment.

39-1739
Mesoscale weather effects of variable snow cover over Northeast Colorado.
Johnson, R.H., et al, *Monthly weather review*, June 1984, 112(6), p.1141-1152, 14 refs.
Young, G.S., Toth, J.J., Zehr, R.M.
Snow cover effect, Weather, Meteorological data, Boundary layer, Snow cover distribution, Cloud cover, United States—Colorado.

39-1740
Probability models for annual extreme water-equivalent ground snow.
Ellingwood, B., et al, *Monthly weather review*, June 1984, 112(6), MP 1823, p.1153-1159, 12 refs.
Redfield, R.K.
Snow water equivalent, Snow loads, Roofs, Statistical analysis, Design.
A statistical analysis of annual extreme water-equivalents of ground snow (reported as inches of water) measured up through the winter of 1979-80 at 76 weather stations in the northeast quadrant of the United States is presented. The analysis suggests that probability distributions with longer upper tails than the Type I distribution of extreme values are preferable for describing the annual extremes at a majority of sites. Sampling errors and the selection of water-equivalents for planning and design purposes also are described.

39-1741
Model for predicting ice accretion and ablation in water bodies.
Danard, M., et al, *Monthly weather review*, June 1984, 112(6), p.1160-1169, 44 refs.
Gray, M., Lyv, G.
Ice growth, Ablation, Ice models, Ice forecasting, Ice accretion, Ice water interface, Sea ice, Snow physics, Meteorological factors.

39-1742
Checklist of marine phytoplankton and sea ice microalgae recorded from Arctic Canada.
Hsiao, S.I.C., *Nova Hedwigia. Zeitschrift für Kryptogamenkunde*, 1983, 37(2-3), p.225-313, With *French summary*. Refs. p.309-313.
Plankton, Algae, Marine biology, Sea ice, Cryobiology, Ice composition, Impurities, Classifications, Arctic Ocean.

39-1743
Monte Carlo calculations for the ice-rules model, with and without Bjerrum defects.
Adams, D.J., *Journal of physics C: Solid state physics*, Aug. 20, 1984, 17(23), p.4063-4070, 15 refs.
Ice physics, Ice models, Ice crystal structure, Proton transport, Mathematical models, Defects.

39-1744
Convective heat losses from a pipe buried in a semi-infinite porous medium.
Bau, H.H., *International journal of heat and mass transfer*, Nov. 1984, 27(11), p.2047-2056, With French, German and Russian summaries. 11 refs.
Underground pipelines, Heat loss, Porous materials, Convection, Heat transfer, Temperature effects, Mathematical models.

39-1745
Analysis of heat transfer during melting from a vertical wall.
Okada, M., *International journal of heat and mass transfer*, Nov. 1984, 27(11), p.2057-2066, With French, German and Russian summaries. 14 refs.
Heat transfer, Melting, Liquid solid interfaces, Latent heat, Convection, Temperature distribution.

39-1746
Conduction phase change beneath insulated heated or cooled structures.
Lunardini, V.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1982, CR 82-22, 40p., ADA-119 595, 19 refs.
Permafrost beneath structures, Permafrost heat transfer, Freeze thaw cycles, Conduction, Heat transfer, Phase transformations, Underground pipelines, Thermal insulation, Analysis (mathematics).
The problem of thawing beneath heated structures on permafrost (or cooled structures in non-permafrost zones) must be addressed if safe engineering designs are to be conceived. In general there are no exact solutions to the problem of conduction heat transfer with phase change for practical geometries. The quasi-steady approximation is used here to solve the conductive heat transfer problem with phase change for insulated geometries including infinite strips, rectangular buildings, circular storage tanks, and buried pipes. Analytical solutions are presented and graphed for a range of parameters of practical importance.

39-1747
Underwater pingos of the Beaufort Sea—a review.
Gendzwill, D.J., *Musk-ox*, 1983, No.32, p.1-9, With Inuit summary. 7 refs.
Pingos, Ocean bottom, Paleoclimatology, Beaufort Sea.

39-1748
Development of Beaufort Sea hydrocarbons.
Todd, M.B., *Musk-ox*, 1983, No.32, p.22-43, With Inuit summary.
Artificial islands, Hydrocarbons, Ice conditions, Icebreakers, Natural resources, Exploration, Offshore drilling, Marine transportation, Beaufort Sea.

39-1749
Radar measurements of borehole geometry on the Greenland and Antarctic ice sheets.
Jezek, K.C., *Geophysics*, Feb. 1985, 50(2), MP 1817, p.242-251, 12 refs.
Glacier flow, Radar echoes, Boreholes, Ice sheets, Ice mechanics, Glacier oscillation, Greenland, Antarctica—Dome C.
A method for measuring the geometry of boreholes in glaciers has been developed and tested in Greenland and Antarctica. Coordinates of points along the borehole are determined by lowering a passive radar target into the borehole and then tracking the target from three surface stations. Comparison of geometry interpreted from radar data and from a conventional inclinometry experiment indicates that radar data can be used to estimate average borehole inclination and azimuth but cannot be used to measure details of the borehole geometry that are revealed by conventional inclinometry surveys. Random error introduced by variations in the physical properties of the glacier and electrical noise in the radar unit limit measurement accuracy, but the accuracy can be improved by establishing additional surface radar stations around the borehole. These experiments demonstrate the utility of the radar method and suggest the possibility of deploying permanently installed radar targets in ice sheets to measure intraglacial movements. (Auth.)

39-1750
Proceedings, Vols.1 and 2.
IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., August 27-31, 1984, [1984], 2 vols., Refs. passim. For individual papers see 39-1751 through 39-1820.
Ice surveys, Ice physics, River ice, Sea ice, Ice control, Meetings, Ice conditions, Ice cover effect.

39-1751
Critical strain energy as a failure and crack propagation criterion for ice.
Hamza, H., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.1-17, 31 refs.
Ice cracks, Crack propagation, Ice strength, Stress strain diagrams, Ice loads, Brittleness, Ice elasticity, Viscoelasticity, Analysis (mathematics).

39-1752
Laboratory investigation of the kinetic friction coefficient of ice.
Forland, K.A., et al, MP 1825, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.19-28, 11 refs.
Tatinclaux, J.C.
Ice friction, Ice loads, Ice mechanics, Ice hardness, Ice solid interface, Surface roughness, Experimentation, Temperature effects, Shear stress.
In the growing field of ice engineering there is a need to establish standardized model tests of structures for use in environments. This study was designed to investigate the relative influence of various parameters on the kinetic friction coefficient between ice and different surfaces and determine which of those variables would need future, in-depth investigation. Friction tests were performed with urea-doped, columnar ice, and the parameters of normal pressure, velocity, type of material, material roughness, ice hardness and test configuration were studied. Tests were conducted by pulling a loaded sample of ice over a sheet of material and by pulling a loaded sample of material over an ice sheet. An ambient temperature of -1.5C was maintained throughout the testing process, and the ice surface hardness was measured using a specially designed apparatus. The experimental results of the friction tests revealed that the behavior of the friction coefficient with varying velocity was significantly influenced by the test configuration and material roughness. Its magnitude was also affected by varying normal pressure, ice hardness, surface roughness and type of material.

39-1753
Effect of grain size on the compressive strength of ice.
Schulson, E.M., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.29-38, 10 refs.
Cannon, N.P.
Ice strength, Grain size, Compressive properties, Models, Strains, Stresses.

39-1754
Procedure to account for machine stiffness in uniaxial compression tests.
Timco, G.W., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.39-47, 10 refs.
Frederking, R.
Ice strength, Compressive properties, Ice solid interface, Strains, Stresses, Tests.

39-1755
Creep of simulated pressure ridge granular ice.
Nadreau, J.P., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.49-61, 23 refs.
Michel, B.
Ice creep, Pressure ridges, Compressive properties, Stress strain diagrams, Ice crystal structure, Rheology, Grain size, Temperature effects, Time factor.

39-1756
Viscoelastic buckling of beams and plates on elastic foundation.
Sjölind, S.-G., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.63-72, 5 refs.
Ice mechanics, Ice creep, Viscoelasticity, Ice sheets, Boundary value problems, Elastic properties, Structures, Ice cover thickness, Analysis (mathematics), Buckling.

39-1757
Flexural strengths of freshwater model ice.
Gow, A.J., MP 1826, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.73-82, 4 refs.
Ice strength, Flexural strength, Lake ice, Ice crystal structure, Ice temperature, Grain size, Tests.
In this paper we present results of small beam tests performed on simulated lake ice corresponding in structure to the two major ice types, S1 and S2, encountered in lake ice covers. In these tests a combination of cantilever and simply supported beams was used to ascertain the dependence of flexural strength of the ice on its structure and temperature. It was found that macrocrystalline (S1) ice and columnar (S2) ice exhibit significant differences in bending strength and that substantial stress concentrations exist at the fixed corners of cantilever beams. Differences in response of S1 and S2 ice to bending forces clearly reflect variations in grain size, crystal orientation, temperature, and *temperature gradient* in the simulated ice, and these factors must be carefully considered when interpreting results of tests of the flexural strength of natural ice covers.

39-1758
New testing technique of ice strength in compression and bending.
Khrapatyi, N., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.83-91, 20 refs.
Wessels, E.
Ice strength, Compressive properties, Flexural strength, Ice models, Mathematical models, Tests.

39-1759
Icebreaking by gas blasting.
Mellor, M., MP 1827, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.93-102, 6 refs.
Ice blasting, Ice breaking, High pressure tests, Ice cover thickness, Gases, Tests, Ice loads, Hydraulic structures, Equipment.
Icebreaking tests utilizing high pressure air and CO(2), low pressure air, and fuel/oxidant combustion are reviewed and the results are interpreted. Applying cube root energy scaling to test discharges of approximately 1 MJ, it appears that fracture craters up to about 5.8 m/MJ(1/3) in diameter can be formed by optimum underwater blasts. Practical systems for clearing or displacing ice could be based on air guns developed for offshore seismic work, with gun pressure in the range 17-20 MPa and single-gun energy up to about 11 MJ. A procedure for making preliminary design calculations and safety appraisals is outlined, and it is concluded that a working "Super-Bubbler" need not be very complex or expensive.

39-1760
Behaviour of sea ice plates under long term loading.
Tinawi, R.A., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.103-112, 9 refs.
Gagnon, L.
Ice loads, Sea ice, Plates, Ice creep, Flexural strength, Shear modulus, Experimentation, Ice deformation, Temperature effects, Loads (forces).

39-1761
Indentation spalling of edge loaded ice sheets.
Palmer, A.C., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.113-121, 7 refs.
Ice cracks, Ice edge, Fracturing, Ice loads, Ice mechanics, Structures, Ice elasticity, Loads (forces), Velocity, Analysis (mathematics).

39-1762
Flexure of a non-homogeneous floating ice sheet.
Selvadurai, A.P.S., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.123-136, Refs. p.130-132.
Floating ice, Flexural strength, Ice elasticity, Ice loads, Stresses, Ice sheets, Loads (forces), Ice structure, Analysis (mathematics).

39-1763
Quiet freezing of lakes and the concept of orientation textures in lake ice sheets.
Gow, A.J., MP 1828, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.137-149, 6 refs.
Lake ice, Ice crystal structure, Ice nuclei, Freezing, Turbulence, Tests.
Several years' observations of the crystalline structure of ice sheets forming on a number of New England lakes indicate that just two major types of congelation ice are formed during quiet (non-turbulent) freezing of lake water. These are: (1) ice sheets characterized by the growth of massive prismatic crystals exhibiting vertical or near-vertical c-axes probably equivalent to so-called S1 ice and (2) ice sheets composed predominantly of vertically elongated crystals exhibiting horizontally oriented c-axes, so-called columnar ice or S2 ice. In this context of quiet freezing of lakes it was also determined that columnar textures are always associated with horizontal c-axis orientations of the crystals, whereas the development of c-axis vertical orientation is invariably linked with the growth of massive crystals. These observations have fostered the concept of orientation texture.

39-1764
Anchor ice in Lachine Rapids, results of observations and analysis.
Marcotte, N., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.151-160, 7 refs.
Bottom ice, Water level, Ice sheets, Ice mechanics, Ice models, Meteorological factors, Mathematical models, Canada—Saint Lawrence River.

39-1765
Dynamics of frazil ice formation.
Daly, S.F., et al, MP 1829, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.161-172, 10 refs.
Stolzenbach, K.D.
Frazil ice, Ice crystal growth, Heat transfer, Mathematical models, Mass transfer, Surface properties, Ice crystal nuclei.
This paper applies quantitative approaches of large-scale industrial crystallization to the study of frazil ice. The development of a crystal number continuity equation and a heat conservation equation can serve as a basis for predicting size distribution and concentration of frazil crystals. The key parameters in these equations are the crystal growth rate and the rate of secondary nucleation. The crystal growth rate is determined by the heat transfer rate from the crystals to the fluid, the intrinsic kinetics of the crystals, surface tension, and the mass transfer rates. Available data indicate that the growth of the major axis of frazil crystals is controlled largely by heat transfer. The heat transfer expression for disks suspended in turbulent flow is presented. The rate of secondary nucleation can be expressed as the product of three functions, which relate the energy transferred to crystals by collision and the number of surviving crystals produced by the collision. The secondary nucleation rate is found to be a function of the turbulent energy dissipation and a strongly nonlinear function of the form and magnitude of the crystal size distribution. The number continuity and heat conservation equations are troublesome to solve simultaneously because they are nonlinear and dimensionally incompatible. However, the equations can be used in the development of models of frazil ice formation.

39-1766
Forecasting snow and black ice growth from temperature and precipitation.
Bengtsson, L., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.173-185, 7 refs.
Lake ice, Snow depth, Ice growth, Colored ice, Freezeup, Air temperature, Precipitation (meteorology), Forecasting, Ice cover thickness, Ice formation, Degree days.

39-1767
Regularity of the freezing-up of the water surface and heat exchange between water body and water surface.
Matoušek, V., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.187-200, 3 refs.
River ice, Freezeup, Fast ice, Water temperature, Heat transfer, Ice formation, Ice cover, Surface temperature, Mathematical models.

39-1768
Recent developments on mathematical modelling of winter thermal regime of rivers.
Marcotte, N., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.201-210, 7 refs.
River ice, Thermal regime, Ice formation, Water temperature, Fast ice, Ice conditions, Velocity, Ice sheets, Frazil ice, Mathematical models.

39-1769
Statistical time-series analysis and reliability of data describing the occurrence and intensity of ice-phenomena in rivers and reservoirs.
Votruba, L., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.211-221, 5 refs.
Patera, A.
River ice, Hydraulic structures, Ice loads, Ice conditions, Statistical analysis, Meteorological factors, Time factor, Reservoirs.

39-1770
Prediction of ice formation for the Eastern Scheldt in the Netherlands.
Pilarczyk, K.W., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.223-232, 12 refs.
Ice formation, Ice forecasting, Estuaries, Climatic factors, Ice growth, Seasonal variations, Netherlands.

39-1771
Analysis of ice dam formation and its forecasting.
Liu, G., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.233-240.
Xu, D.
Ice dams, Ice forecasting, River ice, Hydraulics, Thermal regime, Ice cover effect, River basins.

39-1772
Field investigation of St. Lawrence River hanging ice dams.
Shen, H.T., et al, MP 1830, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.241-249, 12 refs.
Van DeValk, W.A.
Ice dams, River ice, Ice surveys, River flow, Channels (waterways), Bottom topography, Canada—Saint Lawrence River.
A field survey of a hanging ice dam in the St. Lawrence River is reported. Cross section profiles of the dam, the channel geometry, and velocity profiles underneath the dam were measured. Formation processes of hanging dams are discussed and supported by field observations.

39-1773
Jamming tendency of floating ice in rivers and reservoirs.
Kolodko, J., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.251-254, 3 refs.
Jackowski, B.
Ice jams, Floating ice, River ice, Reservoirs, Ice cover effect, Water flow, Analysis (mathematics), River flow, Bottom topography.

39-1774
Backwater profiles on hydroelectric reservoir with ice cover.
Majewski, W., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.255-264, 3 refs.
Ice jams, Ice cover effect, Floods, Water level, River ice, Reservoirs, Ice cover thickness, Mathematical models, Electric power.

39-1775
Strategic hydro power operation at freeze-up reduces ice jamming.
Bilfalk, L., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.265-275, 3 refs.
Ice formation, Ice cover effect, Ice jams, River ice, Freezeup, River flow, Electric power, Ice booms, Ice breaking.

39-1776
LaGrande River in full scale ice hydraulics laboratory.
Drouin, M., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.277-290, 18 refs.
Haussel, R.
River ice, Ice conditions, River flow, Water level, Ice formation, Bottom topography, Electric power, Seasonal variations, Canada—Quebec—LaGrande River.

39-1777
Concept and experience in controlling the ice regime on the Yugoslav reach of the Danube after the construction of the Iron Gate dam.
Petković, S., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.291-302, 1 ref.
Pavlović, R., Varga, S.
River ice, Ice conditions, Ice control, Water level, Reservoirs, Ice breaking, Protection, Yugoslavia—Danube River.

39-1778
Ice management for Beaufort Sea production harbours.
Andersen, P.F., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.303-314, 9 refs.
Allyn, N.F.B.
Ice control, Ports, Ice navigation, Ice breaking, Wave propagation, Equipment, Beaufort Sea.

39-1779
Types of ice run and conditions for their formation.
Matoušek, V., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.315-327, 6 refs.
River ice, Freezeup, Frazil ice, Ice formation, Ice conditions, Ice structure, Analysis (mathematics).

39-1780
Methods of ice control for winter navigation in inland waters.
Frankenstein, G.E., et al, MP 1831, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.329-337, 11 refs.
Wortley, C.A.
Ice navigation, Ice control, River ice, Ports, Winter maintenance, Ice breaking, Thermal effects, Ice removal, Ice booms.
Successful methods of controlling ice in rivers and harbors where winter navigation is maintained are described. These methods are developed from field and laboratory research studies and from operating experiences. The control of ice is achieved through layout and design of harbor facilities, management of traffic operations, and by using chemical, electrical, mechanical, and thermal methods including ice breaking, channel and flow modifications, air bubbling, warm water discharges, resistance heating, coatings, and control structures. The control methods used must be evaluated in terms of reliability, safety, energy consumption, and environmental impact for costs and effectiveness for both docks and harbors. Thermal methods and mechanical methods are most favored by these criteria.

39-1781
Ice sheet retention structures.
Perham, R.E., MP 1832, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.339-348, 20 refs.
Ice control, Structures, Ice sheets, Ice booms, Ice formation, Ice cover, Countermeasures, Water flow.
Ice sheets are formed and retained in several ways in nature, and an understanding of these factors is needed before most ice sheet retention structures can be successfully applied. Many retention structures float and are somewhat flexible; others are fixed and rigid or semirigid. An example of the former is the Lake Erie boom and of the latter, the Montreal ice control structure. Ice sheet retention technology is changing. The use of timber cribs is gradually but not totally giving way to sheet steel pilings and concrete cells. New structures and applications are being tried, but with caution. Ice-hydraulic analyses are helpful in predicting the effects of structures and channel modifications on ice cover formation and retention. Often, varying the flow rate in a particular system at the proper time will make the difference between whether a structure will or will not retain ice. The structure, however, invariably adds reliability to the sheet ice retention process.

39-1782
Analysis of river ice resistance from measured velocity profiles.
Davar, K.S., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.349-358, 6 refs.
MacGougan, I.M.
River flow, River ice, Ice cover effect, Turbulent flow, Surface roughness, Bottom topography, Velocity, Analysis (mathematics).

39-1783
Analysis of rapidly varying flow in ice-covered rivers.
Ferrick, M.G., MP 1833, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.359-368, 6 refs.
River flow, River ice, Ice cover effect, Ice breakup, Water waves, Friction, Experimentation, Ice jams, Icebound rivers.
Rapidly varying flow waves are a primary cause of ice cover breakup on rivers. Due to the presence of ice and the difficulties involved in determining conditions in the field, analyses of river waves during breakup are subject to much uncertainty. We conducted laboratory experiments to determine the effects of the ice cover upon these waves, and to identify the physical processes that produce these effects. The dimensionless friction scaling parameter of the St. Venant equations provides a quantitative estimate of the friction/inertia balance that dictates river wave behavior. Knowledge of this balance is essential to interpretation and analysis of flow wave data. In this paper we apply the friction parameter in our interpretation of the laboratory data and address discrepancies between data and previous analyses of an ice jam release on the Athabasca River.

39-1784
Unsteady flow model of river ice hydraulics.
Yapa, P.N.D.D., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.369-377, 8 refs.
Shen, H.T.
River flow, River ice, Ice cover effect, Hydraulics, Unsteady flow, Ice cover thickness, Ice conditions, Mathematical models.

39-1785
Analysis of causes for floods during ice run on the lower reaches of the Yellow River.
Chen, Z., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.379-388.
Sun, Z., Wang, W.
Floods, Ice breakup, Ice mechanics, River ice, River flow, Topographic effects, Meteorological factors, Hydrology, Bottom topography, China—Yellow River.

39-1786
Procedure for calculating river flow rate under an ice cover.
Alger, G.R., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.1, [1984], p.389-398, 7 refs.
Santeford, H.S.
River flow, Ice cover effect, River ice, Ice cover thickness, Forecasting, Flow rate, Mathematical models.

39-1787
Crushing ice forces on cylindrical structures.
Morris, C.E., et al, MP 1834, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.1-9, 19 refs.
Sodhi, D.S.
Ice pressure, Structures, Ice solid interface, Compressive properties, Ice cover thickness, Piles, Ice loads, Ice strength, Velocity, Experimentation.
The parameters varied during the experimental program were structure diameter and velocity. Maximum ice forces were normalized by the product of structure diameter, ice thickness and unconfined compressive strength of the ice. The results show that ice forces depend significantly on aspect ratio and velocity-to-thickness ratio, and that variations in velocity-to-structure-diameter ratio does not influence the maximum normalized forces.

39-1788
Effect of structural properties on ice-induced self-excited vibrations.
Määttänen, M., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.11-20, 12 refs.
Ice mechanics, Ice solid interface, Ice strength, Ice breakup, Piles, Ice loads, Ice sheets, Brittleness, Superstructures, Vibration, Flexural strength.

39-1789
Model tests and in situ behaviour of prestressed anchors in snow and ice.
Jessberger, H.L., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.21-32, 6 refs.
Bässler, K.-H.
Anchors, Boreholes, Bearing strength, Snow strength, Ice cover strength, Rheology, Deformation, Tests, Models, Antarctica—Georg von Neumayer Station.
The new anchor system consists of an inner steel rod with a base plate which is lowered into a drilled hole. The hole is partly filled with powdered snow on top of which a steel tube is placed with a diameter equal to the hole diameter. The steel tube is closed at the bottom. By pulling the inner rod against the tube the snow inside the hole is prestressed forming a stoppel. The long time bearing capacity and the creep deformation of this anchor system is simulated in model tests. The one year behaviour of anchors of such type being installed near the Georg-von-Neumayer-Station in Antarctica is reported.

39-1790
Ice scour and ice ridging studies in Lake Erie.
Grass, J.D., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.33-43, 2 refs.
Ice scoring, Pressure ridges, Lake ice, Ice mechanics, Fast ice, Bottom sediment, Damage, Trenches, Cables (ropes).

39-1791
Iceberg collision with semi-submersible drilling unit.
Kitami, E., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.45-53, 4 refs.
Icebergs, Offshore structures, Bearing strength, Sea ice, Ice loads, Impact strength, Offshore drilling, Ice pressure.

39-1792
Summer impact loads from multiyear floes.
Kreider, J., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.55-65, 9 refs.
Ice floes, Impact strength, Offshore structures, Ice pressure, Ice loads, Bearing strength, Velocity, Brittleness, Mathematical models, Beaufort Sea.

39-1793
Analysis and model tests of pressure ridges failing against conical structures.
Wang, Y.S., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.67-76, 11 refs.
Pressure ridges, Offshore structures, Ice pressure, Ice loads, Ice elasticity, Ice plasticity, Surface properties, Models.

39-1794
Ice formation and prevention on sub-zero cooled hydraulic structures.
Engelke, G., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.77-86, 11 refs.
Jürgens, U., Leske, W.
Ice formation, Hydraulic structures, Ice loads, Ice cover thickness, Countermeasures, Steel structures, Temperature effects.

39-1795
Model tests of ice forces on a wide inclined plane.
Timco, G.W., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.87-96, 4 refs.
Ice loads, Floating ice, Offshore structures, Ice solid interface, Ice cover effect, Ice mechanics, Time factor, Ice breaking, Tests, Models.

39-1796
Estimation of internal pressure due to a growth of ice thickness in a caisson.
Saeki, H., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.97-109, 2 refs.
Izumi, K., Sakai, M., Ogura, S.
Ice pressure, Caissons, Salt water, Freezing, Ice growth, Ice cover thickness, Models, Degree days, Tests.

39-1797
Extraction of piles by repeated water-level fluctuations.
Thunbo Christensen, F., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.111-121, 19 refs.
Tryde, P.
Pile extraction, Floating ice, Freezing, Water level, Ice solid interface, Models, Variations.

39-1798
Analysis of piles frozen-in to an ice cover and subjected to forces that cause pile bending.
Kerr, A.D., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.123-134, 6 refs.
Piles, Freezing, Deformation, Ice solid interface, Ice loads, Ice cover effect, Mathematical models, Ice adhesion.

39-1799
Dynamic ice forces on piles.
Khrapatyi, N., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.135-145, 13 refs.
Liubimov, V.
Ice loads, Piles, Dynamic loads, Elastic properties, Ice solid interface, Analysis (mathematics).

39-1800
Dynamic forces of ice floes acting on bridge piers.
Sun, Z.-F., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.147-155, 4 refs.
Ing, D.-Z.
Ice floes, Piers, Ice loads, Dynamic loads, Impact strength, Ice breaking, Bridges, Ice mechanics, Drift, Analysis (mathematics).

39-1801
Reliability of ice-structure interaction load predictions.
Bercha, F.G., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.157-173, 20 refs.
Nagel, R.H., Brown, T.G.
Ice solid interface, Ice loads, Engineering, Structures, Forecasting.

39-1802
Probabilistic analysis of iceberg loads on offshore structures.
Maes, M.A., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.175-188, 9 refs.
Jordaan, I.J.
Icebergs, Ice loads, Offshore structures, Ice conditions, Engineering, Drift, Velocity.

39-1803
Geological evidence for 60 meter deep pressure-ridge keels in the Arctic Ocean.
Reimnitz, E., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.189-206, Refs. p.203-206.
Barnes, P.W., Phillips, R.L.
Pressure ridges, Ice scoring, Geological surveys, Ice mechanics, Bottom topography, Ocean bottom, Sea ice, Age determination, Bottom sediment, Water level, Beaufort Sea.

39-1804
Observations on the growth of urea ice on a small ice basin.
Ettema, R., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.207-216, 4 refs.
Mueller, A., Cook, A.G.
Artificial ice, Urea, Ice growth, Ice crystal structure, Flexural strength, Ice cover thickness, Ice sheets, Tests, Ice strength, Ice friction.

39-1805
Fine grain model ice.
Enkvist, E., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.217-227, 9 refs.
Mäkinen, S.
Ice models, Grain size, Doped ice, Ice strength, Offshore structures, Ice breaking, Ice cracks, Experimentation, Brittleness.

39-1806
Recent experience in conducting ice model tests using a synthetic ice modeling material.
Schultz, L.A., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.229-239, 9 refs.
Free, A.P.
Artificial ice, Ice models, Offshore structures, Ice mechanics, Ice composition, Flexural strength, Ice cover thickness, Ice sheets, Tests, Ice friction, Ice elasticity.

39-1807
Crystalline structure of urea ice sheets used in modeling in the CRREL test basin.
Gow, A.J., MP 1835, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.241-253, 13 refs.
Ice crystal structure, Urea, Artificial ice, Microstructure, Ice models, Sea ice, Ice strength, Ice sheets, Tests.
Standard petrographic techniques were used for studying microstructure in thin sections of urea ice sheets now being used extensively in the CRREL Test Basin for modeling sea ice. Depending mainly on the seeding techniques employed and partly on the thermal condition in the column of urea-doped water two kinds of ice with radically different structural and mechanical properties have been identified. In the one exhibiting vertical c-axis structure minimal urea is incorporated into the ice crystals, and ice sheets with this kind of structure tend to remain "strong" even after the temperature of the ice is raised close to its melting point. Ice of the second type is characterized by a preponderance of crystals exhibiting horizontal c-axes. This kind of ice, which is only produced when the test basin is seeded prior to freezing, also contains abundant inclusions of urea systematically incorporated into the crystals, the overall columnar structure of this ice closely resembles that of ordinary sea ice and optimum test conditions for modeling purposes are usually obtained with warm isothermal ice sheets of the latter type.

39-1808
Problems of river shipping in ice-bound conditions.
Tronin, V.A., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.255-266.
Malikovskil, V.A., Sandakov, IU.A.
Ice navigation, Icebound rivers, Icebreakers, Ice breaking, Ice cover effect, River ice.

39-1809
Great Lakes limited season extension operation of Sault Ste. Marie Locks, Michigan, U.S.A.
Beurket, R.T., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.267-276, 9 refs.
Argiroff, C.
Ice navigation, River ice, Locks (waterways), Ice conditions, Cold weather performance, Climatic factors, Environmental impact.

39-1810
Ship-hull motion through brash ice.
Kitazawa, T., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.277-286, 4 refs.
Ettema, R.
Ice navigation, Ice friction, Ice loads, Tanker ships, Internal friction, Ice solid interface, Velocity, Experimentation, Brash ice.

39-1811
Dynamic response of an icebreaker hull to ice breaking.
Mueller, A., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.287-296, 6 refs.
Ettema, R.
Ice loads, Icebreakers, Buoyancy, Ice breaking, Analysis (mathematics), Velocity, Experimentation.

39-1812
Ice-milling load encountered by a controllable pitch propeller.
Sasajima, T., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.297-307, 10 refs.
Mustamäki, E.
Ice breaking, Propellers, Tanker ships, Ice loads, Stresses, Mathematical models, Design.

39-1813
Some notes on propulsion machinery systems for a large high powered Polar icebreaker.
German, J.G., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.309-323, 6 refs.
Klop, J.C.
Icebreakers, Ice breaking, Ice navigation, Design.

39-1814
Application of subsurface radar measurement of ice thickness.
Mayer, L., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.325-338, 3 refs.
Starosolszky, O.
Ice cover thickness, River ice, Lake ice, Ice bottom surface, Radar echoes, Ice cover effect, Measuring instruments, Ice jams, Electromagnetic properties, Hydraulics.

39-1815
Determination of compressive strength of sea ice by using an ultrasonic pulse.
Saeki, H., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.339-348, 6 refs.
Ono, T., Nakazawa, N., Izumi, K., Saeki, M.
Ice strength, Compressive properties, Sea ice, Ultrasonic tests, Ice composition, Ice temperature, Measuring instruments, Engineering.

39-1816
Evaluation of a biaxial ice stress sensor.
Cox, G.F.N., MP 1836, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.349-361.
Ice loads, Stresses, Measuring instruments, Tests.
Controlled laboratory tests were performed to evaluate the response of a cylindrical, biaxial ice stress sensor. The tests demonstrate that the sensor has a low temperature sensitivity and is not significantly affected by differential thermal expansion between the ice and gauge. Loading tests on fresh water and saline ice blocks containing the embedded sensor show that the sensor has a resolution of 20 kPa and an accuracy of better than 15% under a variety of uniaxial and biaxial loading conditions.

39-1817
Improved marine radar display for navigation in ice-infested waters.
Lewis, E.O., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.363-374, 3 refs.
Currie, B.W.
Ice navigation, Radar echoes, Ice conditions, Ice detection, Sea ice.

39-1818
Effect of frequency and polarization on marine radar detection of ice targets in an ice cover.
Lewis, E.O., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.375-384, 4 refs.
Currie, B.W.
Ice detection, Ice navigation, Polarization (waves), Radar echoes, Icebergs, Ice floes, Pressure ridges.

39-1819
Instrumented auger for vertical survey of ice "hardness".
Harmon, D.J., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.385-392, 2 refs.
Parson, B.L.
Ice hardness, Sea ice, Ice drills, Pressure ridges, Ice cover strength, Measuring instruments.

39-1820
Parametric study of long-term borehole dilatometer tests in ice.
Ladanyi, B., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.2, [1984], p.393-404, 17 refs.
Murat, J.R., Huneault, P.
Ice drills, Boreholes, Ice creep, Rheology, Tests.

39-1821
Crystalline structure of ice formed by droplet accretion, Pts. 1 and 2.
McCappin, C.J., et al, *Journal of the atmospheric sciences*, Aug. 15, 1984, 41(16), p.2437-2455, 20 refs.
Ice accretion, Ice crystal structure, Microstructure, Thin sections.

39-1822
Circulation in antarctic waters as revealed by iceberg tracks 1972-1983.
Tchernia, P., et al, *Polar record*, Sep. 1984, 22(138), p.263-269, 4 refs.
Jeannin, P.F.
Ocean currents, Icebergs, Drift, Bottom topography.
Successively using positioning satellites Eole, Nimbus F, Tiros N-Argos, movements of 21 Antarctic icebergs were monitored daily from radio transmissions; 17 of the bergs were followed over periods of 228-828 days through distances of 1600 to 8000 km. Mean daily positions, calculated from several observations, were accurate to less than 5.5 km for Eole and Nimbus, 0.9 km for Argos. Grouped into three areas (Weddell Sea, Enderby Land to Adélie Land, Ross Sea), the trajectories cover four fifths of the continental periphery. Movements clearly indicate singular points along the boundary between the two circumpolar currents, the East Wind and West Wind drifts, and variations in the strength and direction of flow of these currents; submarine topography and other underlying causes are suggested. (Auth.)

39-1823
How waves break up inshore fast ice.
Squire, V.A., *Polar record*, Sep. 1984, 22(138), p.281-285, 6 refs.
Sea ice, Fast ice, Ice breakup, Ocean waves.

39-1824
Arctic and alpine karst in Norway.
Gale, S.J., *Polar record*, Sep. 1984, 22(138), p.311-314, 4 refs.
Karst, Rocks, Patterned ground, Norway.

39-1825
Examination of metal inputs to the southern Beaufort Sea by disposal of waste barite in drilling fluid.
Macdonald, R.W., *Ocean management*, June 1984, 8(1), p.29-49, Refs. p.46-49.
Offshore drilling, Drilling fluids, Water pollution, Trace metals, Beaufort Sea.

39-1826
Late winter chlorophyll *a* distributions in the Weddell Sea.
Marra, J., et al, *Marine ecology progress series*, Oct. 1984, 19(3), p.197-205, 55 refs.
Boardman, D.C.
Chlorophylls, Cryobiology, Water chemistry, Sea ice, Ice cores, Photosynthesis, Antarctica—Weddell Sea.
Chlorophyll *a* measurements were made in 3 different environments beneath the pack ice, in pack ice cores, and in the water column in the ice edge zone (IEZ). Phytoplankton photosynthesis measurements were made on samples from beneath the pack ice and from a station at the IEZ. Chlorophyll *a* values in the mixed layer beneath the pack ice average 12 mg/sq m. Within the IEZ (at 6/10's coverage) water column chlorophyll *a* doubles. Compared to values beneath the pack ice, the IEZ is characterized by a localized ten-fold increase in surface chlorophyll *a*. Photosynthesis parameters likewise increase at the ice edge, and a rate of primary production of 300 to 400 mg/sq m/d is estimated for this region. Significant amounts of chlorophyll *a* are found near the base of the pack ice column, and evidence is presented which suggests an active biological community living within the pack ice. Overall, the data are consistent with the idea that phytoplankton distributions are

regulated by the availability of light. Furthermore, the data indicate the importance of the IEZ to primary production in the southern ocean. (Auth.)

39-1827
Siliceous microfauna in waters beneath antarctic sea ice.
Morley, J.J., et al, *Marine ecology progress series*, Oct. 1984, 19(3), p.207-210, 9 refs.
Stepien, J.C.
Plankton, Microbiology, Sea ice, Cryobiology, Antarctica—Weddell Sea.
Plankton tows sampling various water depths beneath antarctic sea ice recovered a high proportion of the cold water assemblage of radiolaria present in Recent surface sediments underlying these waters. Of the 3 depth intervals sampled, the highest abundances of polycystine radiolaria were collected in vertical tows from the upper 100 m. Phaeodarian radiolarians occupy a slightly deeper habitat in ice-covered waters with highest concentrations occurring in tows sampling depths between 100 and 200 m. The water structure at the ship station where the highest numbers of polycystine radiolarians were collected was unique in that it consisted of an entrained warm cell of Weddell Deep Water surrounded by cold Weddell Deep Water. (Auth.)

39-1828
Antarctic adventure. [Erlebnis Antarktis].
Gernandt, H., Berlin, Transpress, 1984, 284p., In German. 24 refs.
Research projects, International cooperation, Ice sheets, Sea ice, Natural resources.
The memoir recounts activities of the GDR during the 1979/1980 summer season which entailed travel by ship, airplane, and helicopter along the coast of the northeastern quadrant of the continent, a visit to the inland station of Mirnyy and to many of the national stations in this region. A background essay includes descriptions of the physical environment, history of antarctic discovery and exploration through the inception of the Antarctic Treaty. Some of the highlights of the 1979-80 summer season include the increased interest in the ice edge; descriptions of the visits to the various stations and the research programs in progress, and several vignettes of memorable events over the years. A lesson closes the memoir. Antarctica is a unique place where the environment and international motivation for cooperation in research have combined to produce a successful venture unknown elsewhere on earth.

39-1829
In the hostile world of ice. [En el mundo hostil de los hielos], *Antártida*, Feb. 1984, No.13, p.35-42, In Spanish.
Ice.
The geography, topography and climate of Antarctica and its surrounding waters are reviewed, with particular emphasis on the ice, its various forms and dangers, and the role it plays in the world climate.

39-1830
New technology of erecting tower pile-drivers on artificially frozen ground. [Novaia tekhnologiia vozvedeniia bashennykh koprov na zamorozhennykh gruntakh],
Vialov, S.S., et al, *Shakhtnoe stroitel'stvo*, Nov. 1984, No.11, p.7-10, In Russian.
Sapronov, V.T., Barskii, B.I., Red'ko, D.I., Sadovskii, A.V.
Hammers, Mine shafts, Towers, Earthwork, Waterproofing, Artificial freezing, Construction equipment.

39-1831
Combined control of the state of artificially frozen enclosure during mine shaft construction. [Kompleksnyi kontrol' sostoianiia ledoporodnogo ograzhdeniia pri sooruzhenii stvola shakhty],
Tiutiunnik, P.M., et al, *Shakhtnoe stroitel'stvo*, Nov. 1984, No.11, p.14-19, In Russian. 3 refs.
Romenskii, A.A.
Mine shafts, Waterproofing, Earthwork, Artificial freezing, Sands, Excavation, Loams.

39-1832
Block method of cutting frozen ground with gravel and crushed stone inclusions. [Protsess blokirovannogo rezaniia merzlogo grunta s gravilno-galechnikovymi vkliucheniiami],
Sokolov, L.K., et al, *Stroitel'nye i dorozhnye mashiny*, Sep. 1984, No.9, p.17-18, In Russian. 3 refs.
Danilov, A.K., Dashevskii, A.G.
Earthwork, Frozen fines, Gravel, Excavation, Construction equipment.

39-1833
Tenth anniversary of the *Vavilov Dome*. [Desiatiletie "Kupola Vavilova"],
Govorukha, L.S., *Zemlia i vselennaia*, Sep.-Oct. 1984, No.5, p.79-82, In Russian.
Land ice, Ice dating, Ice cover thickness, Topographic features, Glacier ice, Radar echoes, Glaciation, Paleoecology, Research projects, Measuring instruments, Subglacial observations, USSR—Severnaya Zemlya.

39-1834
Prefabricated large-block residential houses for the North. [Krupnoblochnye zhilye doma dlia Severa],
Atzenberg, G.B., et al, *Zhilishchnoe stroitel'stvo*, Oct. 1984, No.10, p.14-16, In Russian.
[Akushevskii, L.E.
Concrete structures, Residential buildings, Permafrost beneath structures, Cold weather construction.

39-1835
Peculiarities of drying milled peat on a cryogenic deposit. [Osobennosti sushki frezernogo torfa na kriogennoi zalezhi],
Balabolin, V.G., *Torfianaia promyshlennost'*, Sep. 1984, No.9, p.15-16, In Russian. 5 refs.
Peat, Swamps, Mining, Organic soils, Permafrost depth, Frost penetration, Cryogenic structure.

39-1836
Radial stresses acting on well walls at different depths during freezing of fluids in caverns. [Radial'noe napriazhenie na stenke skvazhiny na raznykh glubinakh pri smerzanii zhidkosti v kaverne],
Antipov, V.I., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Neft' i gaz*, Aug. 1984, No.8, p.27-28, In Russian. 4 refs.
Zharkov, A.V., Nagaev, V.B.
Boreholes, Oil wells, Soil freezing, Drilling fluids, Frost penetration, Stresses.

39-1837
On the winter coefficient. [O zimnem koeffitsiente],
Sergutin, V.F., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Energetika*, Dec. 1984, No.12, p.103-105, In Russian. 6 refs.
Turutin, B.F.
River diversion, Subglacial drainage, Icebound rivers, Channels (waterways), Slush, Cold weather performance, Bottom ice.

39-1838
***Military operations in northern regions* according to non-Soviet military publications** [Boevye deistviia v severnykh rajonakh (Po materialam zarubezhnoi voennoi pechati)],
Sergeev, A., *Voennyi vestnik*, Nov. 1984, No.11, p.80-82, *In Russian*
Tundra, Military operation, Military equipment, Swamps, Military transportation, Permafrost, Polar regions, Snowstorms, Blowing snow.

39-1839
Glaciological work in 1983.
Liestøl, O., *Oslo. Norsk polarinstitutt. Arbok*, 1984, 1983, p.35-45.
Glacier surveys, Glacier mass balance, Glacier oscillation, Glacier flow, Norway.

39-1840
Vertical ice forces on a pile; experimental, theoretical and proposed engineering prevention study.
Coe, T.J., Kingston, University of Rhode Island, 1982, 81p., M.S. thesis. Refs. p.78-81.
Pile extraction, Ice strength, Ice loads, Ice pressure, Ice solid interface, Uplift pressure, Water level, Ice cover thickness, Ice control, Countermeasures, Forecasting, Tests.

39-1841
Concretes for mine shaft construction under permafrost conditions and in aggressive media. [Betony dlia shakhtnykh stvolov sooruzhaemykh v usloviiakh vechnoi merzloty i agressivnykh sred],
Trofimov, B.IA., et al, *Shakhtnoe stroitel'stvo*, Sep. 1984, No.9, p.16-18, *In Russian*.
Gorbunov, S.P., Mushtakov, M.I.
Mine shafts, Concrete placing, Permafrost control, Artificial freezing, Concrete retarders, Corrosion.

39-1842
Ultimate strength of side grillage structures of ice-strengthened ships. [Predel'naia prochnost' bortovykh perekrytii sudov ledovogo plavaniia],
Benenson, A.M., et al, *Sudostroenie*, June 1984, No.6, p.5-8, In Russian. 5 refs.
Kurdiumov, V.A.
Ships, Ice navigation, Design, Loads (forces), Ultimate strength, Construction materials.

39-1843
River passenger hovercraft *Luch*. [Rechnoe passazhirskoe sudno na vozdushnoi podushke "Luch"],
Zoroastrov, V.K., et al, *Sudostroenie*, Sep. 1984, No.9, p.3-4, In Russian.
Tsipershtein, V.N.
Air cushion vehicles, Ships, Design.

39-1844
Nuclear-powered icebreaker *Rossiia*. [Atomnyi ledokol "Rossiia"],
Dem'ianchenko, V.IA., et al, *Sudostroenie*, Aug. 1984, No.8, p.3-6 + 2 plates, In Russian. 4 refs.
Livshits, S.G.
Icebreakers, Ice navigation, Design.

39-1845
[Proceedings].
Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984, [1984], var.p., Refs. passim. For selected papers see 39-1846 through 39-1868.
Offshore structures, Offshore drilling, Ice loads, Ice navigation, Ice conditions, Cold weather operation, Meetings, Climatic factors, Sea ice, Ice solid interface, Arctic Ocean.

39-1846
Kulluk extends the Arctic offshore drilling season.
Frankovich, E.W., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 17p. + figs.
Offshore drilling, Floating structures, Ice conditions, Ice control, Cold weather operation, Engineering, Beaufort Sea.

39-1847
Caisson Retained Island (CRI) the first year of operation.
Comyn, M.J., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 12p., 5 refs.
Artificial islands, Caissons, Cold weather operation, Offshore drilling, Ice control, Ice loads, Ocean waves.

39-1848
Design, construction and deployment of a concrete island drilling system the Glomar Beaufort Sea I.
Wetmore, S.B., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 39p., 12 refs.
Borchardt, D.R.
Artificial islands, Offshore drilling, Concrete structures, Ice conditions, Ice loads, Exploration, Cold weather construction, Design, Environments, Beaufort Sea.

39-1849
***Bottom founded mobile* offshore drilling unit in Canada's Beaufort Sea.**
Myers, R., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 16p. + figs., 10 refs.
Crockett, R., Fercho, E.
Offshore drilling, Caissons, Ice loads, Steel structures, Offshore structures, Damage, Design criteria, Cold weather operation, Winter, Environments, Beaufort Sea.

39-1850
Some characteristics of welds in steels used in Arctic offshore structures and ships.
Blakesley, P., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 16p. + figs., 42 refs.
Imgram, A., Hsu, T.M.
Offshore structures, Ships, Welding, Cold weather construction, Steel structures, Corrosion, Temperature effects.

39-1851
Some aspects of the Naval Architecture of Arctic structures and vessels.
Hatfield, P.S., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 7p.
Offshore structures, Ships, Cold weather operation.

39-1852
New approach to relief well drilling in the Canadian Beaufort Sea.
Scott, W.A., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 45p.
Wright, B.D.
Offshore drilling, Wells, Fast ice, Sea ice, Natural resources, Caissons, Cold weather operation, Environments.

39-1853
Superbeacon Syledis: an experience with large integrated positioning drilling systems in the Canadian Beaufort Sea.
Green, I.M., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 12p.
Offshore drilling, Offshore structures, Indicating instruments, Beaufort Sea.

39-1854
Deployment of Beaudril Molikpak at Tarsiut.
Jefferies, M.G., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 32p. + figs., 12 refs.
Stewart, H.R., Thomson, R.A.A., Goldby, H.M.
Offshore structures, Cold weather construction, Engineering, Ocean bottom, Ice conditions, Safety, Beaufort Sea.

39-1855
Ice interaction with structures: recent developments and future trends.
Croasdale, K.R., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 22p.
Ice loads, Offshore structures, Ice solid interface, Ice cover effect, Ice conditions, Ice pressure, Caissons, Platforms.

39-1856
Environmental and performance monitoring for offshore Arctic exploration structures.
Dixit, B.C., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 10p. + figs.
Pilkington, G.R., Eley, F.J.
Offshore structures, Cold weather operation, Ice control, Exploration, Monitors, Forecasting, Beaufort Sea.

39-1857
Thermal design aspects of a mobile Arctic drilling platform.
Richardson, D.W., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 14p. + figs.
Smith, H., King, J., Hauptman, E.G.
Offshore drilling, Offshore structures, Cold weather operation, Heat transfer, Ice conditions, Temperature effects, Climatic factors, Design, Equipment, Analysis (mathematics), Platforms.

39-1858
Radar remote surveying for Arctic operations.
Inkster, D.R., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 18p., 4 refs.
Remote sensing, Sea ice distribution, Ice detection, Ice conditions, Ice edge, Monitors, Marine transportation, Beaufort Sea.

39-1859
Design and operation of a class four icebreaker fleet for the Beaufort Sea.
Browne, R., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 8p.
Icebreakers, Ice navigation, Design, Offshore drilling, Ice control, Beaufort Sea.

39-1860
Development of new structures combined with use of rubble fields.
Potter, R.E., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 18p., 7 refs.
Ice islands, Artificial islands, Offshore structures, Ice loads, Ice control, Marine transportation, Exploration, Cost analysis, Spray freezing.

39-1861
Sonat Hybrid Arctic Drilling Structure—SHADS.
Sonat Offshore Drilling, Inc, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 13p.
Offshore drilling, Offshore structures, Pressure ridges, Ice loads, Ice solid interface, Design, Concrete structures, Steel structures.

39-1862
Mobile Arctic Island (MAI) for drilling and production.
Berlie, E.M., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 42p.
Pullerits, K., Sheps, S.G.
Artificial islands, Offshore drilling, Caissons, Ice loads, Impact strength, Floating structures, Platforms.

39-1863
Moving towards production in the Beaufort Sea.
Smith, B.S., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 13p. + figs., 7 refs.
Fitzpatrick, J., Johansson, B.M.
Offshore drilling, Offshore structures, Floating structures, Ice conditions, Ice loads, Foundations, Explorations, Design criteria, Platforms, Beaufort Sea.

39-1864
Computer simulation techniques for Arctic offshore design—a review.
Erbatur, M.F., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 9p. + figs.
Maddock, W.
Offshore structures, Ice solid interface, Ice conditions, Ice loads, Design, Computerized simulation, Ice mechanics, Ice pressure, Soil physics, Platforms.

39-1865
Operation, testing and design of vessels in the Canadian Beaufort Sea.
Churcher, A.C., et al, Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 34p., 3 refs.
Johansson, B.M., Duff, J.
Ice navigation, Ships, Ice conditions, Ice loads, Damage, Cold weather operation, Design criteria, Beaufort Sea.

39-1866
Underwater support capabilities—Arctic marine operations.
English, J.G., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 10p.
Offshore drilling, Hydraulic structures, Floating structures, Ships, Maintenance, Ice removal, Damage.

39-1867
Caisson drilling and completion system.
Hewlett, C., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 17p. + 19 figs.
Offshore drilling, Caissons, Ice conditions, Sea ice, Exploration.

39-1868
Survival systems in Arctic conditions.
Seligman, B., Arctic Offshore Technology Conference and Exposition, Calgary, Alberta, Nov. 6-9, 1984. Proceedings, [1984], 6p.
Cold weather survival, Ships, Offshore structures, Ice conditions, Safety.

39-1869
Alaskan Beaufort Sea: ecosystems and environments.
Barnes, P.W., ed, Orlando, FL, Academic Press, 1984, 466p., Refs. passim. For selected papers see 39-1870 through 39-1884.
Schell, D.M., ed, Reimnitz, E., ed.
Sea ice distribution, Subsea permafrost, Ice scoring, Bottom sediment, Ecosystems, Environments, Ice mechanics, Ocean bottom, Marine biology, Pressure ridges, Beaufort Sea, United States—Alaska.

39-1870
Beaufort Sea: background, history, and perspective.
Norton, D., et al, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.3-19, 28 refs.
Weller, G.
Sea ice distribution, Ice conditions, Coastal topographic features, Ice cover thickness, Bottom topography, Shores, Oceanography, Seasonal variations, History, Beaufort Sea.

39-1871
Observations and analyses of sediment-laden sea ice.
Osterkamp, T.E., et al, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.73-93, Refs. p.91-93.
Gosink, J.P.
Sea ice, Bottom sediment, Ice composition, Ice solid interface, Drill core analysis, Frazil ice, Shores, Light transmission, Ocean bottom.

39-1872
Beaufort Sea ice motions.
Pritchard, R.S., Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.95-113, 20 refs.
Ice mechanics, Sea ice, Drift, Ice forecasting, Oil spills, Models, Accuracy, Wind velocity, Seasonal variations, Beaufort Sea.

39-1873
Structure of first-year pressure ridge sails in the Prudhoe Bay region.
Tucker, W.B., et al, MP 1837, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.115-135, 25 refs.
Sodhi, D.S., Govoni, J.W.
Pressure ridges, Ice structure, Sea ice, Ice cover thickness, Ice sheets, Models, Ice pileup, United States—Alaska—Prudhoe Bay.

39-1874
Fast ice sheet deformation during ice-push and shore ice ride-up.
Shapiro, L.H., et al, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.137-157, 15 refs.
Metzner, R.C., Hanson, A., Johnson, J.B.
Ice pileup, Ice override, Ice deformation, Fast ice, Ice push, Ice mechanics, Beaches, Stresses, United States—Alaska—Barrow.

39-1875
Pack ice interaction with Stamukhi Shoal, Beaufort Sea, Alaska.
Reimnitz, E., et al, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.159-183, 51 refs.
Kempema, E.W.
Pack ice, Ice scoring, Ocean bottom, Remote sensing, Bottom topography, Bottom sediment, LANDSAT, Beaufort Sea.

39-1876
Ice gouging characteristics and processes.
Barnes, P.W., et al, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.185-212, Refs. p.210-212.
Rearic, D.M., Reimnitz, E.
Ice scoring, Ocean bottom, Bottom topography, Ice mechanics, Pressure ridges, Bottom sediment, Seasonal variations, Water level, Acoustic measurement, Beaufort Sea.

39-1877
Some probabilistic aspects of ice gouging on the Alaskan Shelf of the Beaufort Sea.
Weeks, W.F., et al, MP 1838, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.213-236, 23 refs.
Barnes, P.W., Rearic, D.M., Reimnitz, E.
Ice scoring, Pressure ridges, Bottom topography, Ocean bottom, Statistical analysis, Offshore structures, Design, Bottom sediment, Pipelines, Beaufort Sea.

39-1878
Determining distribution patterns of ice-bonded permafrost in the U.S. Beaufort Sea from seismic data.
Neave, K.G., et al, MP 1839, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.237-258, 24 refs.
Sellmann, P.V.
Subsea permafrost, Seismic velocity, Permafrost distribution, Exploration, Crude oil, Seismic refraction, Velocity, Temperature distribution, Detection, Beaufort Sea.

39-1879
Acoustic velocities of nearshore materials in the Alaskan Beaufort and Chukchi Seas.
Morack, J.L., et al, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.259-274, 26 refs.
Rogers, J.C.
Subsea permafrost, Acoustic measurement, Permafrost distribution, Seismic surveys, Wave propagation, Detection, Velocity, Mapping, Beaufort Sea, Chukchi Sea.

39-1880
Sediment characteristics of the lagoons of the Alaskan Beaufort Sea coast and evolution of Simpson Lagoon.
Naidu, A.S., et al, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.275-292, Refs. p.290-292
Mowatt, T.C., Rawlinson, S.E., Weiss, H.V.
Bottom sediment, Sedimentation, Marine deposits, Stratigraphy, Remote sensing, Drill core analysis, Shores, Lagoons, Beaufort Sea.

39-1881
Phytoplankton abundance, chlorophyll *a*, and primary productivity in the western Beaufort Sea.
Horner, R., Alaskan Beaufort Sea ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.295-310, 34 refs.
Marine biology, Plankton, Chlorophylls, Biomass, Ice conditions, Oceanography, Classifications, Beaufort Sea.

39-1882
Annual carbon budget for an arctic kelp community.
Dunton, K.H., Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.311-325, 24 refs.
Marine biology, Algae, Plants (botany), Nutrient cycle, Biomass, Growth, Grazing, Beaufort Sea.

39-1883
Bacterial populations of the Beaufort Sea.
Atlas, R.M., et al, Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.327-345, Refs. p.343-345.
Griffiths, R.P.
Bacteria, Marine biology, Cold tolerance, Bottom sediment, Ecosystems, Seasonal variations, Marine deposits, Beaufort Sea.

39-1884
Interaction of oil and arctic sea ice.
Thomas, D.R., Alaskan Beaufort Sea: ecosystems and environments. Edited by P.W. Barnes, D.M. Schell and E. Reimnitz, Orlando, FL, Academic Press, 1984, p.441-460, Refs. p.458-460.
Sea ice, Oil spills, Interfaces, Environmental impact, Ice mechanics, Thermal effects, Crude oil, Natural gas, Pollution, Ocean currents, Countermeasures, Beaufort Sea.

39-1885
Improving the efficiency of mining in the north. [Povyshenie effektivnosti vedeniia gornykh rabot v usloviiakh Severa],
Izakson, V.IU., ed, Yakutsk, SO AN SSSR, 1983, 85p., In Russian. For selected papers see 39-1886 through 39-1894. Refs. passim.
Mine shafts, Placer mining, Permafrost thermal properties, Frozen rock strength, Coal, Drilling, Blasting, Supports, Excavation, Dynamic loads, Construction equipment.

39-1886
***Improving the methods* of mining excavation in northeastern mines.** [Puti sovershenstvovaniia sposobov provedeniia gornykh vyrabotok na shakhtakh severo-Vostoka],
Popkov, V.E., et al, Povyshenie effektivnosti vedeniia gornykh rabot v usloviiakh Severa (Improving the efficiency of mining in the north) edited by V.IU. Izakson, Yakutsk, SO AN SSSR, 1983, p.3-12, In Russian. 5 refs.
Umantsev, R.F.
Mine shafts, Permafrost thermal properties, Excavation, Frozen rock strength, Construction equipment.

39-1887
Peculiarities of pillarless mining of coal under permafrost conditions. [Osobennosti bestselikovoi podgotovki ugol'nykh plastov v usloviiakh mnogoletnei merzloty],
Strel'nikov, K.M., et al, Povyshenie effektivnosti vedeniia gornykh rabot v usloviiakh Severa (Improving the efficiency of mining in the north) edited by V.IU. Izakson, Yakutsk, SO AN SSSR, 1983, p.12-21, In Russian., In Russian. 1 ref.
Izakson, V.IU., Glazkov, IU.F.
Coal, Permafrost control, Mines (excavations), Permafrost thermal properties, Drilling, Frozen rock strength, Blasting.

39-1888
Allowing for dynamic laods on mechanized reinforcements when excavating coal under permafrost conditions. [*Uchet dinamicheskikh nagruzok na mekhanizirovannuiu krep'* pri otrabotke ugol'nykh plastov v usloviiakh mnogoletnei merzloty],
Vikulov, M.A., Povyshenie effektivnosti vedeniia gornykh rabot v usloviiakh Severa (Improving the efficiency of mining in the north) edited by V.IU. Izakson, Yakutsk, SO AN SSSR, 1983, p.21-26, In Russian. 4 refs.
Mines (excavations), Coal, Drilling, Blasting, Permafrost physics, Supports, Dynamic loads.

39-1889
Technico-economical model for determining the applicability of mechanized supports at the placer mines of the Northeast. [Tekhniko-ekonomicheskaia model' dlia opredeleniia ratsional'noi oblasti primeneniia mekhanizirovannoi krepi na rossypnykh shakhtakh Severo-Vostoka],
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Stoliarov, A.M.
Supports, Placer mining, Models, Excavations, Permafrost, Economic analysis.

39-1890
Peculiarities of underground mining of perennially *frozen placer deposits*. [Osobennosti podzemnoi otrabotki tekhnogennykh mnogoletnemerzlykh rossypei],
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Badmaev, R.S.
Placer mining, Mine shafts, Excavation.

39-1891
***Combined method of placer mining* in permafrost.** [Kombinirovannyi sposob razrabotki mnogoletnemerzlykh rossypei],
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Placer mining, Frozen rock strength, Trenching, Permafrost.

39-1892
Estimating the *possibility of obtaining* the required quality coal with planned-direction mining of the Neryungrinskiy cross-section. [Otsenka vozmozhnosti dobychi uglia zadannogo kachestva pri proektnom napravlenii razvitiia gornykh rabot Neriungrinskogo razreza],
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Gavrilov, V.L.
Mining, Coal, Excavation, Permafrost.

39-1893
Improving the stability of quarry slopes in the north. [Povyshenie ustoichivosti otkosov kar'erov Severa],
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Vlas'ev, V.R.
***Quarries, Slope stability, Permafrost structure, Slope* protection, Thermal insulation, Mining.**

39-1894
Technical and economic comparison of different versions of the tumbler method of extraction in the Far North. [Osobennosti tekhniko-ekonomicheskogo sravneniia variantov "stakannoi" *vyemki trubok* v usloviiakh Krainego Severa],
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Mining, Permafrost, Transportation, Roads, Houses, Economic analysis.

39-1895
Ecology of tundra ponds of the Arctic Coastal Plain: a community profile.
Hobbie, J.E., *U.S. Fish and Wildlife Service. Report*, June 1984, FWS/OBS-83/25, 52p., Refs. p.45-48.
Ponds, Biomass, Ecology, Tundra, Ice cover, Nutrient cycle, Animals, Vegetation, Human factors engineering, Vehicles, Ecosystems, United States—Alaska—Arctic Coastal Plain.

39-1896
Design of municipal buildings for the Far North. Reference book. [Proektirovanie grazhdanskikh zdanii dlia Krainego Severa. Spravochnoe posobie],
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Poluektov, V.E., Sorokin, A.A.
Urban planning, Cryogenic soils, Permafrost bases, *Foundations, Permafrost beneath structures*, Active layer, Environmental protection, Buildings, Climatic factors, Arctic landscapes.

39-1897
Local contrasts in geosystems. [Lokal'nye kontrasty v *geosistemakh*],
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Kolomyts, E.G., ed.
***Taiga*, Alpine tundra, Plains, Cryogenic soils, Organic soils, Mountain soils, Slope processes, Radar photography, Infrared photography, Snowstorms, Baykal Amur railroad, Snow accumulation, Vegetation patterns, Plant ecology, Permafrost distribution, Hydrothermal processes, Radiation balance, Snow cover distribution, Snow water equivalent.**

39-1898
***Contrasts and the dynamics of the natural-territorial* structure of the southern part of the Bureinskiy Range.** [Kontrastnost' i dinamika prirodno-territorial'noi struktury iuzhnoi chasti Bureinskogo khrebta],
Golubchikov, IU.N., Lokal'nye kontrasty v geosistemakh (Local contrasts in geosystems) edited by A.P. Kapitsa and E.G. Kolomyts, Vladivostok, 1977, p.8-18, In Russian. 19 refs.
Taiga, Swamps, Solifluction, Cryogenic soils, Alpine *landscapes, Peat, Geocryology, Mountain soils, Slope* processes, Permafrost structure, Hydrothermal processes, Organic soils.

39-1899
Hydrothermal structure of landscapes in the Kingan-*Bureya* lowland. [Gidrotermicheskaia struktura landshaftov Khingano-Bureinskogo nizkogor'ia],
Kolomyts, E.G., Lokal'nye kontrasty v geosistemakh (Local contrasts in geosystems) edited by A.P. Kapitsa and E.G. Kolomyts, Vladivostok, 1977, p.19-76, In Russian. 40 refs.
Plains, Cryogenic soils, Swamps, Vegetation patterns, Taiga, Slope processes, Permafrost distribution, Slope orientation, Hydrothermal processes, Plant ecology, Mountain soils, Radiation balance.

39-1900
Photogenic hydrothermal contrasts in landscapes of the Kingan-Bureya lowlands. [Fitogennye gidrotermicheskie kontrasty v landshaftakh Khingano-Bureinskogo nizkogor'ia],
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Surova, N.A.
Alpine landscapes, Swamps, Taiga, Cryogenic soils, Radar photography, Infrared photography, Soil mapping, Snow surveys, Landscape types, Geobotanical interpretation.

39-1901
Space-time regularities governing landslide-rock stream morpholithogenesis under monsoon and continental climatic conditions in the continental part of the Far East. [Prostranstvenno-vremennye zakonomernosti razvitiia osypnogo i kurumovogo morfolitogeneza v usloviiakh mussonnogo i kontinental'nogo klimata materikovoi chasti Dal'nego Vostoka],
Korotkii, A.M., et al, Lokal'nye kontrasty v geosistemakh (Local contrasts in geosystems) edited by A.P. Kapitsa and E.G. Kolomyts, Vladivostok, 1977, p.122-133, In Russian. 10 refs.
Nikol'skaia, V.V., Skryl'nik, G.P.
Landslides, Rock streams, Alpine tundra, Taiga, Vegetation patterns, Geocryology, Slope processes, Alpine landscapes.

39-1902
Winter regimes and snow cover of intermontane valleys in the lower Amur River region adjacent to the Baykal Amur railroad. [Zimnii rezhim i snezhnyi pokrov mezhgornykh ponizhenii nizhnego Priamur'ia (raĭonov tiagoteiushchikh k trasse BAM)],
Surova, N.A., Lokal'nye kontrasty v geosistemakh (Local contrasts in geosystems) edited by A.P. Kapitsa and E.G. Kolomyts, Vladivostok, 1977, p.135-155, In Russian. 8 refs.
Snowstorms, Valleys, Snow accumulation, Baykal Amur railroad, Alpine landscapes, Snow cover distribution, Snow depth, Snow density, Air temperature, Snow water equivalent.

39-1903
Contrasts in geographic differentiation of snow cover on the Badzhal'skiy Range. [Kontrasty geograficheskoĭ differentsiatsii snezhnogo pokrova Badzhal'skogo khrebta],
Martynova, A.M., Lokal'nye kontrasty v geosistemakh (Local contrasts in geosystems) edited by A.P. Kapitsa and E.G. Kolomyts, Vladivostok, 1977, p.156-170, In Russian. 10 refs.
Snowfall, Snow surveys, Mapping, Snow accumulation, Baykal Amur railroad, Alpine landscapes, Seasonal variations, Snow cover distribution.

39-1904
Influence of local factors on snow cover distribution in dark-conifer taigas of the southern part of the central Sikhote-Alin'. [Vliianie lokal'nykh faktorov na raspredelenie snezhnogo pokrova v poiase temnokhvoĭnoĭ taĭgi iuzhnoĭ chasti Srednego Sikhote-Alinia],
Rosman, A.P., Lokal'nye kontrasty v geosistemakh (Local contrasts in geosystems) edited by A.P. Kapitsa and E.G. Kolomyts, Vladivostok, 1977, p.171-181, In Russian. 13 refs.
Taiga, Snow accumulation, Snow cover distribution, Altitude, Snow depth, Alpine landscapes, Snow water equivalent.

39-1905
Hydrothermal regime of snow cover in low-mountain landscapes of the southern part of the central Sikhote-Alin'. [Gidrotermicheskiĭ rezhim snezhnoĭ tolshchi v nizkogornom landshafte iuzhnoĭ chasti Srednego Sikhote-Alinia],
Pavlov, V.N., Lokal'nye kontrasty v geosistemakh (Local contrasts in geosystems) edited by A.P. Kapitsa and E.G. Kolomyts, Vladivostok, 1977, p.182-195, In Russian. 13 refs.
Alpine landscapes, Snow cover distribution, Snow physics, Surface temperature, Hydrothermal processes, Climatic factors.

39-1906
Cryogenic phenomena in landscape types of Kamchatka Peninsula. [Kriogennye iavleniia v tipakh mestnosti Kamchatki],
Bykasov, V.E., Lokal'nye kontrasty v geosistemakh (Local contrasts in geosystems) edited by A.P. Kapitsa and E.G. Kolomyts, Vladivostok, 1977, p.196-202, In Russian. 14 refs.
Plains, Forest land, Tundra, Alpine landscapes, Swamps, Alpine tundra, Deserts, Floodplains, Geocryology, Landscape types, Permafrost distribution.

39-1907
Modeling cryogenic physical-geological processes. [Osnovy modelirovaniia kriogennykh fiziko-geologicheskikh protsessov],
Grechishchev, S.E., et al, Moscow, Nauka, 1984, 230p., In Russian with abridged English table of contents enclosed. Refs. p.223-228.
Chistotinov, L.V., Shur, IU.L.
Models, Stefan problem, Soil air interface, Permafrost physics, Mathematical models, Computerized simulation, Geologic processes, Hydrothermal processes, Thermokarst, Frost heave, Geocryology, Heat transfer, Frost shattering, Phase transformations, Frozen rock temperature.

39-1908
Simulation of the August 1979 sudden discharge of glacier-dammed Flood Lake, British Columbia.
Clarke, G.K.C., et al, *Canadian journal of earth sciences*, Apr. 1984, 21(4), p.502-504, With French summary. 13 refs.
Waldron, D.A.
Drainage, Glacial lakes, Ice dams, Floods, Lake water, Models, Canada—British Columbia—Flood Lake.

39-1909
All-weather millimeter wave imagery in the marginal ice zone.
Hollinger, J.P., et al, *Radio science*, May-June 1984, 19(3), p.862-870, 5 refs.
Troy, B.E., Jr., Hartman, M.F.
Sea ice distribution, Ice edge, Radiometry, Remote sensing, Wave propagation, Ice conditions, Polynyas, Ice cover thickness, Ice water interface.

39-1910
Ancient ice islands in salt lakes of the Central Andes.
Hurlbert, S.H., et al, *Science*, Apr. 20, 1984, 224(4646), p.299-302, 11 refs.
Chang, C.C.Y.
Ice islands, Salt lakes, Mountains, Bolivia—Andes.

39-1911
CIDS: a mobile concrete island drilling system for arctic offshore operations.
Wetmore, S.B., et al, *Marine technology*, Jan. 1984, 21(1), p.1-11, 4 refs.
Ramsden, H.D.
Offshore drilling, Artificial islands, Ice loads.

39-1912
Airborne microwave measurements of the southern Greenland ice sheet.
Swift, C.T., et al, *Journal of geophysical research*, Feb. 10, 1985, 90(B2), p.1983-1994, 13 refs.
Hayes, P.S., Herd, J.S., Jones, W.L., Delnore, V.E.
Airborne equipment, Microwaves, Ice sheets, Remote sensing, Radiometry, Greenland.

39-1913
Operating pattern of antarctic minke whaling by the Japanese expedition in the 1982-1983 season.
Shimadzu, Y., et al, *International Whaling Commission. Report*, 1984, 34, p.357-359, 5 refs.
Kasamatsu, F.
DLC SH381.I484
Pack ice, Cryobiology.
The Japanese expedition took minke whales in antarctic Areas IV-VI for 110 days from 19 November, 1982. A total of 3,224 whales were caught which fulfilled the allocated quota. Operations were concentrated in the eastern half of Area IV and western half of Area V due to successive bad weather in the rest of the area. The latitudinal position of the ice edge in the operation area with respect to the average pattern is discussed. (Auth.)

39-1914
Note on the information on the pack ice edge obtained by Japanese catcher boats in the Antarctic.
Shimadzu, Y., et al, *International Whaling Commission. Report*, 1984, 34, p.361-363, 12 refs.
Katabami, Y.
DLC SH381.I484
Pack ice, Icebergs, Cryobiology.
Observing a fair coincidence between formation of pack ice edge and noon position of factory ship, the latter is considered to represent location of pack ice edge. Information from operating catcher boats on their operating pattern and the observed pack ice edge also supported this relation, which is categorized and encoded for use as effort modifier. (Auth.)

39-1915
Glaciers, snow cover and avalanches in the mountains of Kazakhstan. [Ledniki, snezhnyi pokrov i laviny gornykh raĭonov Kazakhstana],
Tokmagambetov, G.A., ed, Alma-Ata, Nauka, 1983, 207p., In Russian. For selected papers see 39-1916 through 39-1931. Refs. passim.
Avalanches, Glacier ice, Mountain glaciers, Snow cover stability, Glacier surfaces, Sporadic permafrost, Glacial hydrology, Glacial lakes, Moraines, Mudflows, Ground ice, Ice crystal size, Alpine landscapes, Avalanche formation, Permafrost distribution, Ice structure, Ice formation, Ice crystal structure.

39-1916
Comparison of direct and computed absolute rates of height variation of glacier surfaces. [Sopostavlenie absoliutnoĭ skorosti izmeneniia vysoty poverkhnosti lednika poluchennoĭ priamym i raschetnym metodami],
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Makarevich, A.K., Iskhakov, R.N.
Ice volume, Glacier ice, Glacier flow, Glacier surfaces, Ablation, Mountain glaciers, Alimentation.

39-1917
Evaluating glacier mass changes in areas of accumulation and ablation. [Otsenka izmeneniĭ massy lednika v oblasti akkumuliatsii i abliatsii],
Makarevich, K.G., et al, Ledniki, snezhnyi pokrov i laviny gornykh raĭonov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.8-16, In Russian. 6 refs.
Makarevich, A.K.
Glacier mass balance, Glacier ablation.

39-1918
Possible length of the exposure of physical surfaces of glaciers to solar irradiation in Dzhungarskiy Alatau. [Vozmozhnaia prodolzhitel'nost' obliucheniia solntsem fizicheskoĭ poverkhnosti lednikov Dzhungarskogo Alatau],
Cherkasov, P.A., Ledniki, snezhnyi pokrov i laviny gornykh raĭonov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.16-27, In Russian. 10 refs.
Glacier surfaces, Solar radiation, Mountain glaciers, Radiation balance, Ablation.

39-1919
Heat balance of glacier surfaces in anomalously dry years. [Teplovoĭ balans poverkhnosti lednika v anomal'no zasushlivye gody],
Golovkova, R.G., Ledniki, snezhnyi pokrov i laviny gornykh raĭonov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.28-36, In Russian. 5 refs.
Glacier ice, Glacier surfaces, Heat balance, Mountain glaciers, Heat transfer, Mass transfer.

39-1920
Magnitude of temperature jump under the glaciation conditions of Zailiyskiy Alatau. [O velichine temperaturnogo skachka v usloviiakh oledeneniia Zailiĭskogo Alatau],
Vilesov, E.N., et al, Ledniki, snezhnyi pokrov i laviny gornykh raĭonov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.47-53, In Russian. 4 refs.
Shevelev, IU.A., Denisova, T.IA.
Glacial meteorology, Glacier surfaces, Glacier ice, Ice air interface, Air temperature, Mountain glaciers, Seasonal variations, Ablation, Heat transfer.

39-1921
Temperature regime of high mountain regions in Central Asia and Kazakhstan. [Temperaturnyi rezhim vysokogornykh raĭonov Srednei Azii i Kazakhstana],
Blagoveshchenskiĭ, V.P., Ledniki, snezhnyi pokrov i laviny gornykh raĭonov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.53-73, In Russian. 5 refs.
Ice air interface, Glacial meteorology, Glacier ablation, Heat transfer, Mountain glaciers, Air temperature, Seasonal variations, Glacial hydrology.

39-1922
Distribution of maximum snow reserves on mountain glaciers, exemplified by the Shumskiy glacier, Dzhungarskiy Alatau. [Raspredelenie maksimal'nykh snegozapasov na gornykh lednikakh (na primere lednika Shumskogo v Dzhungarskom Alatau)],
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Razenkov, A.V.
Snowstorms, Glacier surfaces, Snow accumulation, Snow water equivalent, Water reserves, Mountain glaciers, Surface structure, Snow cover distribution, Meteorological factors.

39-1923
Coefficient of solid precipitation transfer to glacier surfaces. [O koeffitsiente kontsentratsii tverdykh osadkov na lednikakh],
Severskiĭ, I.V., Ledniki, snezhnyi pokrov i laviny gornykh raĭonov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.89-98, In Russian. 12 refs.
Snowstorms, Glacier alimentation, Blowing snow, Avalanches, Mountain glaciers, Precipitation (meteorology).

39-1924
Methods of calculating snow reserves in mountains. [K metodike rascheta snegozapasov v gorakh].
Severskii, I.V., Ledniki, snezhnyi pokrov i laviny gornykh raionov Kazakhstana [Glaciers, snow cover and avalanches in the mountains of Kazakhstan] edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.98-118, In Russian. 45 refs.
Snow cover distribution, Snow water equivalent, Glacier ablation, Glacial hydrology, Alpine landscapes.

39-1925
Space-time variability in snow cover recrystallization in the mountains of southeastern Kazakhstan. [Prostranstvenno-vremennaia izmenchivost' perekristallizatsii snezhnogo pokrova v gorakh iugo-vostoka Kazakhstana].
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Snow cover structure, Snow recrystallization, Metamorphism (snow), Snow stratigraphy.

39-1926
Evaluating the possibility of glacier-mudflow danger in Zailiyskiy Alatau from air temperature. [Otsenka vozmozhnostei prognoza gliatsial'not sceleopasnosti v Zailiiskom Alatau po temperaturam vozdukha].
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Glacial lakes, Glacial hydrology, Moraines, Slope processes, Mudflows, Air temperature.

39-1927
Types of avalanche foci, avalanche basins and avalanche danger in the mountains of southeastern Kazakhstan. [Tipy lavinnykh ochagov, lavinnykh basseinov i lavinoopasnykh territorii gornykh raionov IUgo-Vostochnogo Kazakhstana].
Blagoveshchenskii, V.P., Ledniki, snezhnyi pokrov i laviny gornykh raionov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.138-148, In Russian. 3 refs.
Slope processes, Avalanche formation, Snow depth, Avalanche triggering, Avalanche mechanics, Alpine landscapes, Avalanche forecasting, Classifications.

39-1928
Methods of calculating empirical formulas for forecasting fresh-snow avalanches in less explored mountainous regions. [Sposob rascheta empiricheskikh formul dlia prognoza lavin svezhevypavshego snega v maloizuchennykh gornykh raionakh].
Kolesnikov, E.I., Ledniki, snezhnyi pokrov i laviny gornykh raionov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.149-162, In Russian. 6 refs.
Avalanche forecasting, Avalanche formation, Avalanche triggering, Snow cover stability.

39-1929
Influence of synoptic conditions on the formation and movement of catastrophic avalanches. [Vliianie sinopticheskikh uslovii na formirovanie i skhod katastroficheskikh lavin].
Vetrov, N.A., et al, Ledniki, snezhnyi pokrov i laviny gornykh raionov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.165-176, In Russian. 4 refs.
Grakovich, V.F., Trutko, T.V.
Avalanche formation, Avalanche triggering, Snow cover stability, Meteorological factors, Synoptic meteorology.

39-1930
***Vegetation of spruce forests in Zailiyskiy Alatau as an* indicator of permafrost.** [Rastitel'nost' el'nikov Zailiiskogo Alatau - indikator merzlykh porod].
Borshcheva, N.M., et al, Ledniki, snezhnyi pokrov i laviny gornykh raionov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.176-187, In Russian. 12 refs.
Gorbunov, A.P., Severskii, E.V.
Permafrost distribution, Sporadic permafrost, Cryogenic soils, Mosses, Trees (plants), Plant ecology, Alpine landscapes, USSR - Tien Shan.

39-1931
Structure of ground ice in moraines of the Zailiyskiy Alatau. [O stroenii podzemnykh l'dov v morenakh Zailiiskogo Alatau].
Ermolin, E.D., Ledniki, snezhnyi pokrov i laviny gornykh raionov Kazakhstana (Glaciers, snow cover and avalanches in the mountains of Kazakhstan) edited by G.A. Tokmagambetov, Alma-Ata, Nauka, 1983, p.187-194, In Russian. 9 refs.
Moraines, Ice crystals, Ice formation, Ground ice, Ice structure, Ice crystal size, Ice crystal structure.

39-1932
***Engineering and geological research in construction* on weak ground.** [Inzhenerno-geologicheskie izyskaniia dlia stroitel'stva na slabykh gruntakh].
Rubinshtein, A.IA., et al, Moscow, Strojizdat, 1984, 108p., In Russian with English table of contents enclosed. 20 refs.
Kanacv, F.S.
Peat, Foundations, Buildings, *Organic* soils, Clay soils, Lacustrine deposits, Engineering geology, Settlement (structural), Surveys.

39-1933
***Sport- and recreation* related buildings and structures in the North.** [Sportivno-ozdorovitel'nye zdaniia i sooruzheniia na Severe].
Balakhonov, O.N., Leningrad, Stroizdat, 1984, 153p., In Russian with abridged English table of contents enclosed. 84 refs.
***Municipal engineering*, Residential buildings, Urban *planning*, *Permafrost* beneath structures, Recreational facilities, Foundations, Permafrost bases.**

39-1934
Effect of strain-rate dependent yield strength on crater scaling relations.
Gaffney, E.S., *Geophysical research letters*, Feb. 1984, 11(2), p.121-123, 12 refs.
Extraterrestrial ice, Ice creep, Mars (planet), Ice strength, Rheology, Strains, Planetary environments.

39-1935
Role of mosses in reclamation of brine spills in forested areas.
Ross, B.A., et al, *Journal of Canadian petroleum technology*, Nov.-Dec. 1984, 23(6), p.67-71, 39 refs.
Webster, G.R., Vitt, D.H.
Mosses, Land reclamation, Brines, Forest land, Temperature effects, *Soil pollution*, *Environmental impact*, Canada—Alberta.

39-1936
Role of heat and water transport in frost heaving of *fine-grained porous media* under negligible overburden pressure.
Nakano, Y., et al, *Advances in water resources*, June 1984, Vol.7, MP 1842, p.93-102, 18 refs.
Horiguchi, K.
Frost heave, Heat transfer, Water transport, Soil water migration, Porous materials, Water intakes, *Grain size*, *Fines*.
An equation accurately describing the rate of frost heave is derived by using the mixture theory of continuum mechanics. It is shown that the rate of frost heave is determined mainly by the rate of heat removal and the rate of water intake. When the phase equilibrium holds in the system, the relation between the rate of heat removal and the rate of water intake is shown to depend mainly on the phase composition data of a given medium. By studying reported experimental data, it is found that the phase equilibrium may hold until the rate of heat removal reaches a certain critical value. When the rate of heat removal exceeds this critical value, the phase equilibrium may possibly be disrupted for some media.

39-1937
Use of similarity solutions for the problem of a wetting front—a question of unique representation.
Nakano, Y., *Advances in water resources*, Sep 1982, Vol.5, MP 1840, p.156-166, 30 refs.
Seepage, Water, Porous materials, Soil physics, Soil water migration, Flow rate, Analysis (mathematics).
The use of *similarity solutions* for the problem of horizontal infiltration of water into a semi-infinite, dry and homogeneous porous medium is studied based upon some recent results of functional analysis. It is found that the so-called numerical representation of reported experiments of moisture profiles for this problem is not necessarily evidence against the validity of the extended Darcy's law for unsaturated flow through porous media.

39-1938
Snowmelt and logging influence on piezometric levels *in steep forested watersheds in Idaho*.
Megahan, W.F., *Transportation research record*, 1984, No.965, p.1-8, 20 refs.
Snowmelt, Forest land, Watersheds, Water flow, Snow water equivalent, Water pressure, Forest strips, Slope orientation, Snow cover distribution, Mountains, United States - Idaho.

39-1939
***Good results*, advanced fleet bring Gulf to Arctic forefront.**
Cottrill, A., *Offshore engineer*, Dec. 1984, p.24-31.
***Offshore structures*, Offshore drilling, Ice control, Sea ice distribution, Floating structures, Ice removal, Caissons, Ice breaking, Exploration, Beaufort Sea.**

39-1940
Temperatures of near shore icebergs in the St. John's area—1983.
Diemand, D., *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-CORE publication*, Nov. 1984, No.84-14, 55p., 1 ref.
Icebergs, Ice temperature, Measuring instruments, Distribution, Shores, Statistical analysis.

39-1941
Tidal currents and *eddy statistics* from iceberg trajectories off Labrador.
Garrett, C., et al, *Science*, Mar. 15, 1985, 227(4692), p.1333-1335, 14 refs.
Middleton, J., Hazen, M., Majaess, F.
Tidal currents, Ocean currents, Icebergs, Drift.

39-1942
Rheology of glacier ice.
Jezek, K.C., et al, *Science*, Mar. 15, 1985, 227(4692), MP 1844, p.1335-1337, 13 refs.
Alley, R.B., Thomas, R.H.
Glacier ice, Rheology, Ice shelves, Strains, Ice mechanics, Antarctica—Ross Ice Shelf.
A new method for calculating the stress field in bounded ice shelves is used to compare strain rate and deviatoric stress on the Ross Ice Shelf, Antarctica. The analysis shows that strain rate (per second) increases as the third power of deviatoric stress (in newtons per square meter) with a constant of proportionality equal to 2.3 x 10 to the -25th power. (*Auth.*)

39-1943
Arctic technology awaiting big discovery.
Machemehl, J.L., *Offshore*, Feb. 1985, 45(2), p.41-43.
Offshore structures, Offshore drilling, Caissons, Artificial islands, Concrete structures, Steel structures, Floating structures.

39-1944
Arctic report. *Offshore*, Feb. 1985, 45(2), p.44-61. Includes 6 short anonymous articles.
Offshore structures, Offshore drilling, Caissons, Ice conditions, Sea ice distribution, Ice loads, Submarines, Ice control, *Countermeasures*, Floating structures, Towing.

39-1945
Transport of water in frozen soil: 3. *Experiments on* the effects of ice content.
Nakano, Y., et al, *Advances in water resources*, Mar 1984, Vol.7, MP 1843, p.58-64, 8 refs.
Tice, A., Oliphant, J.
Water transport, Frozen ground, Ground ice, Soil water migration, Water vapor, Water content, Experimentation.
Effects of ice content on the transport of water in frozen soil are studied experimentally and theoretically under isothermal conditions. A physical law that the flux of water in unsaturated frozen soils is proportional to the gradient of total water content is proposed. Theoretical justification is made by the use of the two-phase flow theory. The experimental results are shown to support the proposed physical law. The results of this study are presented in two parts. The experimental aspects of the study are presented in this paper and the second paper contains the theoretical aspects of the study.

39-1946
Transport of water in frozen soil: 4. Analysis of experimental results on the effects of ice content.
Nakano, Y., et al, *Advances in water resources*, June 1984, Vol.7, MP 1843, p.58-66, 19 refs.
Tice, A., Oliphant, J.
Water transport, Frozen ground, Ground ice, Soil water migration, *Diffusion*, Analysis (mathematics).
Effects of ice content on the transport of water in frozen soil are studied experimentally and theoretically under isothermal conditions. A physical law that the flux of water in unsaturated frozen soils is proportional to the gradient of total water content is proposed. Theoretical justification is made by the use of the two-phase flow theory. The experimental results are shown to support the proposed physical law. The results of this study are presented in two parts, and this is the second paper describing the theoretical aspects of the study.

39-1947
Geocryological conditions of the Baykal-Stanovoy Range part of the BAM zone. [Geokriologicheskie usloviia Baikalo-Stanovoi chasti zony BAM],
An, V.V., et al, Novosibirsk, Nauka, 1984, 151p., In Russian with English table of contents enclosed. Refs. 139-150.
Liubomirov, A.S., Solov'eva, L.N.
Ice wedges, Permafrost origin, Geological surveys, Mapping, Permafrost distribution, Permafrost structure, Permafrost hydrology, Ice veins, Thermokarst, Baykal Amur railroad, Ice structure, Ice formation, Alpine landscapes, River basins, Valleys.

39-1948
Report of the International Ice Patrol in the North Atlantic; 1983 season.
U.S. Coast Guard, *U.S. Coast Guard. Bulletin,* [1984], No.69, Its report No.CG-188-38, 73p.
Ice reporting, Sea ice distribution, Ice conditions, Aerial surveys, Charts, Seasonal variations, Meteorological data, International cooperation, Atlantic Ocean.

39-1949
Expedition "Arktis 2" on the R.V. *Polarstern* with the cooperation of the R.V. *Valdivia* and research aircraft *Falcon 20* to MIZEX in 1984. [Die Expedition ARKTIS 2 des FS "Polarstern" 1984 mit den Beiträgen des FS "Valdivia" und des Forschungsflugzeuges "Falcon 20" zum Marginal Ice Zone Experiment 1984 (MIZEX)],
Augstein, E., et al, *Berichte zur Polarforschung,* 1984, No.20, 192p., In English and German.
Hempel, G., Schwarz, J., Thiede, J., Weigel, W.
Sea ice distribution, Oceanography, Research projects, Ice loads, Ice edge, Marine biology, Expeditions.

39-1950
Agrophytocenotic aspects of grass sowing in permafrost areas. [Agrofitotsenoticheskie aspekty travoseianiia v zone vechnoi merzloty],
Denisov, G.V., Novosibirsk, Nauka, 1984, 250p., In Russian with abridged English table of contents enclosed. Refs. p.242-248.
Grasses, Permafrost depth, Permafrost thermal properties, Active layer, Cryogenic soils, Plant ecology, Biomass, Microclimatology, Solar radiation, Plant physiology, Human factors, Soil pollution, Roots.

39-1951
SNOW-ONE-B data report.
Bates, R.E., ed, *U.S. Army Cold Regions Research and Engineering Laboratory,* June 1983, SR 83-16, 284p., ADB-088 224, Refs. passim. For individual papers see 39-1952 through 39-1961. For SNOW-ONE-A —preliminary data report see 37-1094 (SR 82-8).
Bowen, S.L., ed.
Snowflakes, Wave propagation, Military operation, Snowfall, Snowstorms, Meteorological data, Visibility, Electromagnetic properties, Optical properties, Transmission.
This is the third in a series of data reports on the SNOW field experiments of the U.S. Army Corps of Engineers Winter Battlefield Obscuration Research Program. It contains data obtained by the U.S. Army Cold Regions Research and Engineering Laboratory and other agencies during the SNOW-ONE-B field experiment at Camp Grayling, Michigan, between 30 November and 17 December 1982. Included are data on meteorology, atmospheric turbulence, visible and IR transmission, snow characterization, millimeter wavelength radar propagation, transmittance through falling and blowing snow, the lidar system, the SMART system, and preliminary smoke trials with snow as a contrast background.

39-1952
Site-specific and synoptic meteorology.
Bates, R.E., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, MP 1845, SNOW-ONE-B data report, p.13-80. ADB-088 224.
Synoptic meteorology, Snowfall, Meteorological data, Snow cover, Snow crystal structure, Wind velocity, Air masses, Statistical analysis.

39-1953
Atmospheric turbulence measurements at SNOW-ONE-B.
Andreas, E.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, MP 1846, SNOW-ONE-B data report, p.81-87. ADB-088 224.
Atmospheric circulation, Snowfall, Spectra, Refraction, Turbulence, Electromagnetic properties, Measuring instruments.

39-1954
Visible/IR transmission and meteorological data.
Ben-Shalom, A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, SNOW-ONE-B data report, p.89-153. ADB-088 224.
Okrasinski, R., Olsen, R., Butterfield, J.E.
Military operation, Infrared reconnaissance, Snowfall, Meteorological data, Lasers, Wave propagation, Optical properties, Rain, Fog, Transmissivity, Military equipment.

39-1955
Snow characterization at SNOW-ONE-B.
Berger, R.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, MP 1847, SNOW-ONE-B data report, p.155-195, ADB-088 224, 2 refs.
Fisk, D., Koh, G., Lacombe, J.
Ice crystal structure, Snow crystal structure, Snow crystal growth, Snow cover distribution, Particle size distribution, Snowfall, Temperature effects, Humidity, Statistical analysis.

39-1956
AFGL snow characterization measurements at SNOW-ONE-B: preliminary analysis.
Berthel, R.O., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, SNOW-ONE-B data report, p.197-208, ADB-088 224, 5 refs.
Plank, V.G., Main, B.A.
Snowfall, Snow crystal structure, Snow water equivalent, Measuring instruments, Velocity.

39-1957
Millimetre wavelength radar propagation measurements at SNOW-ONE-B.
Knox, J.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, SNOW-ONE-B data report, p.209-214. ADB-088 224.
Bauerle, D.G.
Military operation, Snowfall, Wave propagation, Radar echoes, Blowing snow, Measuring instruments, Attenuation.

39-1958
Transmittance measurements, SNOW-ONE-B.
Curcio, J.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, SNOW-ONE-B data report, p.215-237. ADB-088 224.
Lebow, P., Woytko, M.
Snowfall, Transmission, Time factor, Fog, Haze, Measurement, Tests, Smoke.

39-1959
Lidar measurements from the SNOW-ONE-B field experiment.
DeLateur, S.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, SNOW-ONE-B data report, p.239-247. ADB-088 224.
Uthe, E.E., Nielsen, N.B.
Snowfall, Wave propagation, Backscattering, Optical properties, Transmission, Aerosols, Measuring instruments, Lasers, Smoke.

39-1960
SNOW-ONE-B ASL/SMART measurements.
Hanley, S.T., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, SNOW-ONE-B data report, p.249-278, ADB-088 224, 2 refs.
Bean, B.L.
Snowflakes, Snowfall, Transmission, Radiometry, Wave propagation, Military equipment, Microwaves, Meteorological data, Measuring instruments, Snowstorms, Radiance.

39-1961
Smoke trials, SNOW-ONE-B.
U.S. Army. Aberdeen Proving Ground. Chemical Systems Laboratory, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1983, SR 83-16, SNOW-ONE-B data report, p.279-284. ADB-088 224.
Snowfall, Optical properties, Smoke generators, Fog, Atmospheric composition, Air temperature, Tests.

39-1962
Annual report, 1983-84.
British Antarctic Survey, Cambridge, Eng. Natural Environment Research Council, 1984, 104p., Refs. p.84-94.
Research projects, Low temperature research.
General remarks are made concerning finance, staffing, scientific facilities and communication, personnel awards are announced, distinguished visitors, and British and international meetings attended are listed. A resume of antarctic activities in [illegible] and the 1984 austral [illegible] scientific programs are reviewed in considerable detail in solar-terrestrial physics, meteorology and climatology, chemistry, radiation and dynamics of the atmosphere, geology, field geophysics, glaciology, mapping, marine biology, bird and seal biology, terrestrial biology, and medical research. Included are lists of 1983-1984 publications, and staff at various locations, divisions, and ships.

39-1963
Theory of rotating cirque glacier movement and its applications. [Theorie der plastisch rotierenden Kar-Gletscherbewegung und ihre Anwendung],
Körner, H.J., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(2), p.103-130, In German with English and French summaries. Refs. p.126-130.
Cirque glaciers, Glacier flow, Sliding, Glacier [illegible], Mathematical models, Slope orientation, Theories.

39-1964
Snow accumulation, firn temperature and solar radiation in the area of the Colle Gnifetti core drilling site (Monte Rosa, Swiss Alps): Distribution patterns and interrelationships.
Alean, J., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(2), p.131-147, With German and French summaries. 14 refs.
Haeberli, W., Schädler, B.
Snow accumulation, Firn, Snow temperature, Solar radiation, Mountain glaciers, Ice cover distribution, Snow cover distribution, Snowmelt, Wind erosion, Ice temperature, Switzerland—Alps.

39-1965
Evaporation on Hintereisferner. [Über die Verdunstung auf dem Hintereisferner],
Kaser, G., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(2), p.149-162, In German with English summary. 20 refs.
Ice sublimation, Vapor pressure, Glacial meteorology, Glacier tongues, Snow air interface, Surface temperature, Wind velocity, Austria—Hintereisferner.

39-1966
New map "Nördliches Bockkarkees 1979", 1:100.-000. [Zur Karte "Nördliches Bockkarkees 1979", 1:-100,000],
Slupetzky, H., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(2), p.163-171, In German with English summary. 13 refs.
Patzelt, G., Hoberg, C.
Glacier surveys, Mapping, Photogrammetric surveys, Glacier flow, Glacier tongues, Mountain glaciers, Ice breakup, Ice avalanches, Austria—Alps.

39-1967
Glaciers of the Austrian Alps, 1982-1983. [Die Gletscher der Österreichischen Alpen, 1982/83],
Patzelt, G., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(2), p.173-188, In German.
Glacier mass balance, Glacier surveys, Glacier oscillation, Glacier flow, Glacier tongues, Austria—Alps.

39-1968
Follow-up measurements in the Pasterze glacier area (Glockner Group), 1983. [Nachmessungen im Bereich der Pasterze (Glocknergruppe) im Jahre 1983],
Wakonigg, H., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1983, 19(2), p.189-194, In German.
Glacier surveys, Glacier flow, Firn, Glacier tongues, Distribution, Austria—Alps.

39-1969
Forty years of helicopter ice protection experience at Sikorsky aircraft.
Rosen, K.M., et al, *American Helicopter Society. Journal,* Jul, 1981, 26(3), p.5-19, 6 refs.
Potash, M.L.
Aircraft icing, Helicopters, Propellers, Heating, Ice prevention, Countermeasures, Tests.

39-1970
Snow sense; a guide to evaluating avalanche hazard.
Fredston, J.A., et al, Anchorage, Alaska Department of Natural Resources, 1984, 45p., 5 refs.
Fesler, D.
Avalanche formation, Avalanche triggering, Snow slides, Snow accumulation, Snow strength, Accidents, Slope orientation, Manuals.

39-1971
Runoff analysis by the tank model with snow model on six basins, data of which are given by WMO for the intercomparison of conceptual models of snowmelt runoff.
Sugawara, M., et al, *Japan. National Research Center for Disaster Prevention. Report,* Nov. 1984, No.33, p.187-236, In Japanese with English summary, 1 ref.
Watanabe, I., Ozaki, F., Katsuyama, Y.
Runoff, Snowmelt, Watersheds, Precipitation (meteorology), Air temperature, Seasonal variations, Models.

39-1972
Combined satellite surveys of Siberia. [Kompleksnye aerokosmicheskie issledovaniia Sibiri],
IAnshin, A.L., ed, Novosibirsk, Nauka, 1984, 96p., In Russian. For selected papers see 39-1973 through 39-1975. Refs. passim.
Ziat'kova, L.K., ed.
Slope processes, Spaceborne photography, Tundra, Photointerpretation, Taiga, Mapping, Charts, Arctic landscapes, Alpine landscapes, Geologic structures.

39-1973
Remote sensing techniques used in structural-geomorphologic (geodynamic) complexes of different climatic zones in western Siberia. [Distantsionnye issledovaniia strukturno-geomorfologicheskikh (geodinamicheskikh) kompleksov razlichnykh klimaticheskikh zon Zapadnoi Sibiri],
Ziat'kova, L.K., Kompleksnye aerokosmicheskie issledovaniia Sibiri (Combined satellite surveys of Siberia) edited by A.L. IAnshin and L.K. Zait'kova, Novosibirsk, Nauka, 1984, p.71-79, In Russian. 14 refs.
Slope processes, Spaceborne photography, Tundra, Natural resources, Taiga, Landscape types, Mountain glaciers, Geologic structures, Arctic landscapes, Alpine landscapes, Mapping.

39-1974
Remote sensing methods and recent geological formations of central West Siberia. [Distantsionnye metody i novelshie geologicheskie obrazovaniia tsentral'noi chasti Zapadnoi Sibiri],
Volkov, I.A., Kompleksnye aerokosmicheskie issledovaniia Sibiri (Combined satellite surveys of Siberia) edited by A.L. IAnshin and L.K. Zait'kova, Novosibirsk, Nauka, 1984, p.79-85 + 16 plates, In Russian.
Spaceborne photography, Photointerpretation, Snow cover distribution, Aerial surveys, Alpine landscapes, Plains, Route surveys, Charts, USSR—Ob' River, USSR—Irtysh River.

39-1975
Possibility of using multizonal satellite information in studying water resources of the Altai region. [O vozmozhnosti ispol'zovaniia mnogozonal'noi kosmicheskoi informatsii pri izuchenii vodnykh resursov Altaiskogo kraia],
Vostriakova, N.V., Kompleksnye aerokosmicheskie issledovaniia Sibiri (Combined satellite surveys of Siberia) edited by A.L. IAnshin and L.K. Zait'kova, Novosibirsk, Nauka, 1984, p.85-88, In Russian. 3 refs.
Snowmelt, River basins, Flood control, Snow water equivalent, Snow depth, Spaceborne photography, Alpine landscapes, Snow cover distribution.

39-1976
Thermophysical properties of loess. [Teplofizicheskie svoistva lessovykh porod],
Komissarova, N.N., et al, *Inzhenernaia geologiia.* Jan.-Feb. 1985, No.1, p.52-63, In Russian. 16 refs.
Frozen fines, Loess, Permafrost structure, Ice veins, Permafrost thermal properties, Permafrost physics, Ground water, Saturation, Hydrothermal processes.

39-1977
Experimental study of snow loads on metal coverings of an industrial building. [Eksperimental'noe issledovanie protsessa nagruzheniia metallicheskikh konstruktsii pokrytiia promyshlennogo zdaniia snegovoi nagruzkoi],
Okulov, P.D., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1984, No.10, p.8-12, In Russian. 2 refs.
Steel structures, Industrial buildings, Snow loads, Snow accumulation, Stresses, Measuring.

39-1978
Summer thawing of frozen ground curtains built on taliks. [Ottaivanie merzlotnoi zavesy na skvoznom talike v letnii period],
Raspopin, G.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1984, No.10, p.97-101, In Russian. 4 refs.
Kochubievskaia, R.L., Kushnerov, N.V.
Permafrost control, Permafrost hydrology, Thermokarst, Artificial freezing, Taliks, Thermopiles, Earth dams, Permafrost beneath structures.

39-1979
Effective way of increasing the resistance of asphalt-concrete road pavement to thermal stresses. [Effektivnyi put' povysheniia temperaturnoi treshchinostoikosti dorozhnogo asfal'tobetona],
Ponomareva, S.G., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1984, No.10, p.116-118, In Russian.
Pavements, Bituminous concretes, Roads, Frost resistance.

39-1980
Trajectory of a percussion hammer designed for frozen ground. [K voprosu obosnovaniia traektorii dvizheniia chastoudarnogo rabochego organa dlia razrusheniia merzlykh gruntov],
Artem'ev, K.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1984, No.10, p.125-127, In Russian. 4 refs.
Sosnin, N.V.
Earthwork, Hammers, Frozen ground, Design.

39-1981
High-strength perlite-silicate concretes with plasticizing admixtures. [Vysokoprochnye perlitosilikatnye betony s plastifitsiruiushchimi dobavkami],
Paturoev, V.V., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1984, No.11, p.66-68, In Russian. 7 refs.
Shesterkina, N.F.
Winter concreting, Concrete admixtures, Surfactants, Air entrainment, Frost resistance, Concrete strength.

39-1982
Rheological properties of concrete mixtures subjected to percussion and percussion-vibration. [Reologicheskie svoistva betonnykh smesei pri udarnykh i udarno-vibratsionnykh vozdeistviiakh],
Falvusovich, A.S., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1984, No.11, p.68-71, In Russian. 6 refs.
Zubov, IU.A.
Concrete aggregates, Rheology, Frost resistance, Vibration, Impact tests.

39-1983
Milankovitch and climate.
Kukla, G., ed, NATO ASI Series C: Mathematical and physical sciences, Vol.126, Dordrecht, D. Reidel, 1982, 895p. in 2 vols., Refs. passim. For selected papers see 39-1984 through 39-1992 or I-31294 through I-31300.
Imbrie, J., ed, Saltzman, B., ed, Hays, J., ed, NATO Advanced Research Workshop on Milankovitch and Climate, 1982, Palisades, N.Y.
DLC QC884.N185
Paleoclimatology, Climatic changes, Ice sheets, Ice age theory.
At an international symposium 100 scientists met to consider one of the unsolved geophysical problems: the origin of the pleistocene ice ages, and in particular to review and evaluate the progress made in understanding and modelling the physical mechanisms by which the climate-system responds to the calculated changes in the pattern of incoming solar radiation. The proceedings contain the complete texts of over 50 papers. Author and subject indexes are provided.

39-1984
Ice-age Arctic ocean ice-sheets: a possible direct link with insolation.
Fillon, R.H., NATO ASI Series C: Mathematical and physical sciences, Vol. 126, Milankovitch and climate. Edited by A. Berger, J. Imbrie, J. Hays, G. Kukla, and B. Saltzman, Dordrecht D. Reidel, 1982, p.223-240, 38 refs.
DLC QC884.N185
Sea ice, Ice sheets, Insolation, Pleistocene, Ice age theory, Ice volume, Solar radiation, Mass balance, Paleoclimatology, Arctic Ocean.

39-1985
Two-dimensional climate model useful in ice age application.
North, G.R., et al, NATO ASI Series C Mathematical and physical sciences, Vol 126, Milankovitch and climate. Edited by A. Berger, J. Imbrie, J. Hays, G. Kukla, and B. Saltzman, Dordrecht, D. Reidel, 1982, p.513-518, 18 refs.
Mengel, J.G., Short, D.A.
DLC QC884.N185
Ice formation, Ice models, Paleoclimatology, Climatic changes.
The present model which is easily and efficiently solved should prove useful for future studies coupling a simple climate model with a deluxe ice sheet model. The climate model already has the property that glaciers have the potential for growing in the right places and with a reasonable sensitivity (especially with the assistance of CO2 changes). The model in its present form has some rich mathematical structure associated with geography leading to abrupt transitions in ice area as parameters are slowly varied.

39-1986
Some ice-age aspects of a calving ice-sheet model.
Pollard, D., NATO ASI Series C: Mathematical and physical sciences, Vol. 126, Milankovitch and climate. Edited by A. Berger, J. Imbrie, J. Hays, G. Kukla, and B. Saltzman, Dordrecht, D. Reidel, 1982, p.541-564, 44 refs.
DLC QC884.N185
Ice models, Ice age theory, Ice sheets, Calving, Paleoclimatology, Climatic changes.

39-1987
Model of the ice age cycle.
Peltier, W.R., et al, NATO ASI Series C: Mathematical and physical sciences, Vol. 126, Milankovitch and climate. Edited by A. Berger, J. Imbrie, J. Hays, G. Kukla, and B. Saltzman, Dordrecht, D. Reidel, 1982, p.565-580, 30 refs.
Hyde, W.
DLC QC884.N185
Ice age theory, Ice models, Rheology, Marine deposits, Oxygen isotopes, Paleoclimatology, Ice volume, Pleistocene, Ocean bottom, Climatic changes.

39-1988
Sensitivities of cryospheric models to insolation and temperature variations using a surface energy balance.
Ledley, T.S., NATO ASI Series C: Mathematical and physical sciences, Vol. 126, Milankovitch and climate. Edited by A. Berger, J. Imbrie, J. Hays, G. Kukla, and B. Saltzman, Dordrecht, D. Reidel, 1982, p.581-597, 12 refs.
DLC QC884.N185
Ice sheets, Ice models, Insolation, Thermodynamics, Sea ice, Temperature variations, Paleoclimatology, Heat balance.

39-1989
Possible explanation of differences between Pre- and Post-Jaramillo ice sheet growth.
Watts, R.G., et al, NATO ASI Series C: Mathematical and physical sciences, Vol. 126, Milankovitch and climate. Edited by A. Berger, J. Imbrie, J. Hays, G. Kukla, and B. Saltzman, Dordrecht, D. Reidel, 1982, p.599-604, 8 refs.
Hayder, M.E.
DLC QC884.N185
Ice sheets, Ice growth, Ice models, Climatic changes, Ice cover distribution, Paleoclimatology, Plastic flow.

39-1990
On the origin of the ice ages.
Oerlemans, J., NATO ASI Series C: Mathematical and physical sciences, Vol. 126, Milankovitch and climate. Edited by A. Berger, J. Imbrie, J. Hays, G. Kukla, and B. Saltzman, Dordrecht, D. Reidel, 1982, p.607-611, 7 refs.
DLC QC884.N185
Ice age theory, Ice sheets, Origin, Pleistocene, Ice cover distribution, Climatic changes, Periodic variations.

39-1991
Insolation gradients and the paleoclimatic record.
Young, M.A., et al, NATO ASI Series C: Mathematical and physical sciences, Vol. 126, Milankovitch and climate. Edited by A. Berger, J. Imbrie, J. Hays, G. Kukla, and B. Saltzman, Dordrecht, D. Reidel, 1982, p.707-713, 12 refs.
Bradley, R.S.
DLC QC884.N185
Glaciation, Insolation, Paleoclimatology, Climatic changes.
Hemispheric insolation gradients play an important role in driving the global atmospheric circulation, and may have contributed to the growth and decline of continental ice sheets by modulating the transport of moisture to high latitudes. Mid-monthly insolation differences between 30 and 90 deg latitude in each hemisphere were computed at 1000 years intervals for the past 150,000 years. Times of rapid ice build-up correspond to a distinctive seasonal pattern of insolation gradient deviations, with generally high gradients throughout the year, and follow closely times of strong autumn insolation gradients. The opposite patterns are observed at times of ice wastage. (Auth.)

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Broccoli, A.J.
DLC QC884.N185
Albedo, Ice sheets, Paleoclimatology, Climatic changes, Models.
This study investigates the influence of the 18 kyr BP ice sheet on the earth's climate by use of a mathematical model which consists of three basic units: a general circulation model of the atmosphere, a heat and water balance model over the continents, and a simple model of the oceanic mixed layer. A brief description of these three units is given. The results of the study suggest that the effects of increased continental ice extent alone are insufficient to explain the glacial climate of the Southern Hemisphere.

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Helicopters, Power line supports, Steel structures, Transportation, Alpine landscapes, USSR—Caucasus.

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Zyrianov, T.P., Il'kun, V.V., Sumovskiĭ, N.A.
Power lines, Helicopters, Steel structures, Transportation, Alpine landscapes, Construction materials, Foundations, Cements, Grouting.

39-1996
Construction of foundations for metal power line supports. [Ustroĭstvo fundamentov pod metallicheskie opory VL],
Osipov, L.S., et al, *Energeticheskoe stroitel'stvo,* Jan. 1985, No.1, p.27-28, In Russian. 1 ref.
Shengeliia, V.S., Vashakidze, E.A.
Foundations, Power line supports, Steel structures, Reinforced concretes, Concrete structures, Grouting, Alpine landscapes.

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Abdullaev, A.U.
Soil compaction, Loess, Wettability, Blasting.

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Icebound rivers, Estuaries, Stream flow, Subglacial observations, Seasonal variations.

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Hydrological studies of the Ob' River estuary during the expedition of 1977-1979. [Rezul'taty ekspeditsionnykh gidrologicheskikh issledovaniĭ ust'evoĭ oblasti Obi v 1977-1979 gg.],
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39-2016
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Kurzhunov, A.N., *Leningrad. Arkticheskiĭ i Antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1984, Vol.394, p.66-74, In Russian. 9 refs.
Rivers, Ice conditions, Estuaries, Ice forecasting, Heat sinks, Polar regions, Water temperature, Seasonal variations.

39-2017
Providing the national economy with rapid scientific information on ice conditions in lower courses and estuaries of Siberian rivers in the tenth Five-Year-Plan period. [Rezul'taty nauchno-operativnogo obespecheniia narodnogo khoziaĭstva ledovymi prognozami po ust'iam rek Sibiri v X piatiletke],
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Sea water freezing, Ice conditions, Ice forecasting, Ice navigation, Polar regions.

39-2022
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Long range forecasting, Ice conditions, Icebound rivers, Estuaries, Polar regions.

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Transportation, Pipelines, Thermal insulation, Buildings, Foundations, Tundra, Concrete structures, Prefabrication, Arctic landscapes, Petroleum industry, Permafrost beneath structures.

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Snow roads, Ice roads, Prefabrication, Arctic landscapes, Houses, Transportation, Construction equipment.

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Prefabrication, Transportation, Air cushion vehicles, Residential buildings, Modular construction, Polar regions.

39-2029
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Shabanov, P.P., *Stroitel'stvo truboprovodov*, Jan. 1985, No.1, p.14-15, In Russian.
Tundra, Residential buildings, Industrial buildings, Pipelines, Roads, Polar regions, Cost analysis, Petroleum industry, Construction sites.

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Railroads, Embankments, Railroad tracks, Permafrost beneath structures, Construction equipment.

39-2032
Assembly for testing percussion excavators. [Stend dlia ispytaniia rykhlitelei udarnogo deistviia],
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Riutin, I.N.
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Cryogenic soils, Taiga, Soil chemistry, Nutrient cycle, Plant ecology, Human factors.

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Frost susceptibility of soil; review of index tests.
Chamberlain, E.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1981, M 81-02, 110p., ADA-111 752, For another source see 37-973 (MP 1557). Refs. p.83-88.
Frost heave, Soil freezing, Soil mechanics, Ice water interface, Ice solid interface, Soil classification, Temperature gradients, Soil water, Particle size distribution, Grain size.
Methods of determining the frost susceptibility of soils are identified and presented in this report. More than one hundred criteria were found, the most common based on particle size characteristics. These particle size criteria are frequently augmented by information such as grain size distribution, uniformity coefficients and Atterberg limits. Information on permeability, mineralogy and soil classification has also been used. More complex methods requiring pore size distribution, moisture-tension, hydraulic conductivity, heave-stress, and frost-heave tests have also been proposed. However, none has proven to be the universal test for determining the frost susceptibility of soils. Based on this survey, four methods are recommended for further study. They are the U.S. Army Corps of Engineers Frost Susceptibility Classification System, the moisture-tension hydraulic-conductivity test, a new frost-heave test, and the CBR-after-thaw test.

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Ports, Ice navigation, Icebreakers, Ice breaking, Northern Sea Route, Ships, Hydrography, Transportation, Charts.

39-2037
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Kozlov, N.P., ed, Leningrad, Gidrometeoizdat, 1984, 151p., In Russian with English table of contents enclosed. Refs. p.148-150.
Tishchenko, A.P., comp, Viktorov, S.V., comp.
Taiga, Remote sensing, Alpine landscapes, Swamps, Airborne equipment, Planetary environments, Spaceborne photography, Photointerpretation, Sea ice distribution, Snow cover distribution, Oceanography, Data processing, Charts.

39-2038
Catastrophic floods of ice-dammed lakes in southeastern Altai and their traces in topography. [Katastroficheskie sbrosy vod lednikovo-podprudnykh ozer lugo-Vostochnogo Altaia i ikh sledy v rel'efe],
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Glacial lakes, Glacial hydrology, Ice dams, Mudflows, Floods, Alpine landscapes.

39-2039
Cryogenic landforms of King George Island, South Shetland Islands. [Kriogennyi rel'ef ostrova King-Dzhordzh, IUzhnye Shetlandskie ostrova],
Vtiurin, B.I., et al, *Geomorfologiia*, Jan.-March 1985, No.1, p.77-82, In Russian with English summary. 11 refs.
Moskalevskii, M.IU.
Geocryology, Cryogenic structures, Nival relief, Frost heave, King George Island.
King George Island presents a variety of landforms of cryogenic-denudational, nival, solifluction and cryostructural types. A distinct pattern can be discerned in the landforms distribution which is controlled by geomorphology, climate and geocryological features of the island. Cryogenic landforms most typical for the island are described, such as cryogenic-denudational and solifluction terraces, nivation cirques, sorted polygons and circles and linear microforms due to frost heaving at slopes. (Auth.)

39-2040
Life of plants under extreme high-mountain conditions (exemplified by Central Caucasus). [Zhizn' rastenii v ekstremal'nykh usloviiakh vysokogorii (na primere Tsentral'nogo Kavkaza)],
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Gamtsemlidze, Z.G.
Biomass, Ecosystems, Vegetation patterns, Cryogenic soils, Plant ecology, Photosynthesis, Alpine landscapes, Soil water migration, Roots, Plant physiology, Frost penetration, Snow cover effect.

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Tikhvinskiĭ, I.O.
Soil creep, Landslides, Slope processes, Soil water, Frozen fines, Clays, Slope stability, Freeze thaw cycles, Seasonal freeze thaw, Soil erosion.

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Fenchenko, V.N., Borisenko, V.I., Schparber, P.A., Schreiman, A.L.
Soil freezing, Rocks, Cryogenics, Analysis (mathematics), Liquid nitrogen.

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Visible and ultraviolet emission from pulse irradiated amorphous and polycrystalline H2O ice.
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Quickenden, T.I., Litjens, R.A.J., Sangster, D.F.
Ice crystal structure, Luminescence, Spectra, Ultraviolet radiation, Light (visible radiation).

39-2045
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Townsend, R.M., Rice, S.A.
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39-2046
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39-2047
Technology, cost and organization of urban winter road service. [Tecniche, costi ed organizzazione degli interventi di viabilità invernale in ambito urbano],
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Baiano, G.
Snow removal, Winter maintenance, Road maintenance, Cost analysis.

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Dynamics of supercooled liquids and the glass transition.
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Götze, W., Sjölander, A.
Supercooling, Liquids, Freezing, Diffusion, Spectra, Thermodynamics, Pressure, Time factor, Mathematical models.

39-2049
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Readiness key to snow program. *Better roads*, Dec. 1984, 54(12), p.16-17.
Snow removal, Winter maintenance, Road maintenance, Ice control, Chemical ice prevention.

39-2051
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Water temperature, Sea water, Heat balance, Surface temperature, Heat transfer, Ocean currents, Seasonal variations, Heat loss.

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Extraterrestrial ice, Ice crystal structure, Molecular structure, Mars (planet).

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39-2055
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Plakhotnik, A.F., Moscow, Nauka, 1984, 232p., In Russian with abridged English table of contents enclosed. Refs. p.215-229.
Oceanography, Ice conditions, Air water interactions, Drift, Long range forecasting, Oceanographic surveys, Oceanographic ships, Ocean waves, Classifications, Measuring instruments, Ocean currents, Water temperature, Seasonal variations, Ocean environments.
Soviet literature dealing with various aspects of studying small and large-scale variations in oceanographic phenomena and related atmospheric processes is reviewed. Both general treatments and studies relating to specific areas are considered. Chapters dealing with conditions typical of polar (both Arctic and antarctic) regions are on p.99-102, 180-185 (the southern ocean) and 186-195 (the Arctic Ocean).

39-2056
Revealing the structure of soil and vegetational covers on aerial and satellite photographs. [Vyiavlenie struktury pochvenno-rastitel'nogo pokrova s pomoshch'iu aero- i kosmicheskikh snimkov],
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Konstantinov, V.D.
Taiga, Spaceborne photography, Landscape types, Photointerpretation, Cryogenic soils, Vegetation patterns.

39-2057
Numerical interpretation of images obtained by the side-looking radar from the "Kosmos-1500" satellite. [Osobennosti tsifrovoĭ obrabotki radioizobrazheniĭ poluchennykh RLS BO ISZ "Kosmos-1500"],
Pichugin, A.P., et al, *Issledovanie Zemli iz kosmosa*, Nov.-Dec. 1984, No.6, p.82-90, In Russian with English summary. 17 refs.
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Spaceborne photography, Side looking radar, Polar regions, Photointerpretation, Sea ice distribution, Ice cover thickness, Arctic Ocean.

39-2058
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Frost penetration, Porous materials, Frost forecasting, Soil freezing, Saturation, Mathematical models, Frost action, Soil water, Latent heat.

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Three phase temperature-density model to simulate and compare potential snowmelt runoff.
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Runoff, Snowmelt, Heat transfer, Snow temperature, Snow density, Temperature gradients, Sublimation, Metamorphism (snow), Mathematical models, Seasonal variations.

39-2062
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Glacier ice, Pollen, Ice cores, Meltwater, Palynology, Paleoclimatology, Fossils, Canada—Northwest Territories—Devon Island.

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Ice creep, Ice strength, Ice crystal structure, Rheology, Temperature effects, Grain size, Stress strain diagrams, Ice deformation, Tensile properties, Melting points, Analysis (mathematics).

39-2064
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39-2065
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DLC QE696.Q35
Climatic changes, Ice sheets, Mathematical models, Albedo.

39-2067
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DLC QE690.S8
Ice, Sediments.
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39-2069
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39-2070
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Kulikov, G.V., Moscow, Nedra, 1983, 338p., In Russian with abridged English table of contents enclosed 43 refs.
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39-2071
Peculiarities of exploration and gas field development in western Siberia. [Osobennosti razvedki i razrabotki gazovykh mestorozhdenii Zapadnoi Sibiri],
Andreev, O.F., et al, Moscow, Nedra, 1984, 211p., In Russian with abridged English table of contents enclosed. 50 refs.
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Utilization of mineral wastes in the production of construction materials in the Leningrad region. [Ispol'zovanie mineral'nykh otkhodov v proizvodstve stroitel'nykh materialov (na primere predpriiatii Leningradskoi oblasti)],
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39-2073
Field studies of ice cover strength on the Novosibirsk reservoir and the Onega River. [Naturnye issledovaniia prochnosti l'da Novosibirskogo vodokhranilishcha i r. Onegi],
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Icebound lakes, Icebound rivers, Ice cover strength, Ice structure, Dams, Spillways, Ice passing.

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Underground pipelines, Water pipelines, Pipeline freezing, Ice formation, Analysis (mathematics).

39-2075
Method of controlling the state of thermal insulation of underground hot water pipes. [Sposob kontrolia sostoianiia teploizoliatsionnykh konstruktsii podzemnykh teploprovodov],
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Underground pipelines, Water pipelines, Pipeline insulation.

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Construction equipment, Winter maintenance, Baykal Amur railroad, Fuel additives, Subpolar regions, Lubricants.

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Concrete structures, Prefabrication, Concrete admixtures, Surfactants, Air entrainment, Concrete strength, Frost resistance.

39-2078
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Korshunov, V.I., Lange, IU.G.
Concrete aggregates, Sands, Cements, Concrete admixtures, Frost resistance, Air entrainment.

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Bridges, Prefabrication, Concrete aggregates, Reinforced concretes, Cements, Frost resistance.

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Supercooling, Water, Vapor pressure, Ice nuclei, Cloud chambers, Aerosols.

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Hailstone growth, Hailstone structure, Ice crystal structure, Isotope analysis, Storms, Air entrainment.

39-2082
Summary of the strength and modulus of ice samples from multi year pressure ridges.
Cox, G.F.N., et al, *Journal of energy resources technology, Mar. 1985, 107(1), MP 1848, p.93-98. 14 refs.*
For another source see 38-2035.
Richter, J.A., Weeks, W.F., Mellor, M.
Pressure ridges, Ice strength, Compressive properties, Strains, Temperature effects, Porosity, Tests.
Over two hundred unconfined compression tests were performed on vertical ice samples obtained from 10 multi-year pressure ridges in the Beaufort Sea. The tests were performed on a closed-loop electrohydraulic testing machine at two strain rates 1/100,000 and 1/1,000/s and two temperatures (-20 and -5C). This paper summarizes the sample preparation and testing techniques used in the investigation and presents data on the compressive strength and initial tangent modulus of the ice

39-2083
Preliminary examination of the effect of structure on the compressive strength of ice samples from multi-year pressure ridges.
Richter, J.A., et al, *Journal of energy resources technology*, Mar. 1985, 107(1), MP 1849, p.99-102, 9 refs.
For another source see 38-2037 (MP 1685).
Cox, G.F.N.
Pressure ridges, Ice crystal structure, Ice strength, Compressive properties, Strains, Sea ice, Temperature effects, Porosity, Tests.
A series of 222 uniaxial constant-strain-rate compression tests was performed on vertical multi-year pressure ridge sea ice samples. A preliminary analysis of the effect of structure on the compressive strength of the ice was performed on 78 of these tests. Test parameters included a temperature of -5C (23F) and strain rates of 1/100,000 and 1/1,000/s. Columnar ice loaded parallel to the elongated crystal axes and perpendicular to the crystal c-axis was consistently the strongest type of ice. The strength of the columnar samples decreased significantly as the orientation of the elongated crystals approached the plane of maximum shear. Samples containing granular ice or a mixture of granular and columnar ice resulted in intermediate and low strength values. No clear relationship could be established between structure and strength for these ice types. However, in general, the strength decreased with an increase in porosity.

39-2084
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Glacier surges, Glacier flow, Basal sliding, Glacial hydrology, Ice mechanics, Velocity, Seasonal variations, United States—Alaska, Variegated Glacier.

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Freeze thaw cycles, Soil structure, Loams, Sediments, Rheology, Ice lenses, Microstructure, Temperature effects, Mountains, Cryoturbation, Polar regions.

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Seepage, Snowmelt, Frozen ground physics, Snow hydrology, Meltwater, Frost action, Hydrogeology.

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LANDSAT-D investigations in snow hydrology.
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Snow hydrology, Remote sensing, Radiation absorption, Boundary layer, LANDSAT, Reflection, Albedo, Transmissivity.

39-2090
Shock vaporization and the accretion of the icy satellites of Jupiter and Saturn.
Ahrens, T.J., et al, *U.S. National Aeronautic and Space Administration. Contractor report*, 1984, CR-173767, 44p. N84-29843/9.
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Extraterrestrial ice, Planetary environments, Impact strength, Shock waves, Density (mass/volume), Melting.

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Tarquin, A.J., Jones, A.D., Mings, M.L., Schlorholtz, S.M.
Pavements, Soil stabilization, Soil cement, Frost resistance, Fines, Aggregates, Lime, X ray analysis, Design.

39-2092
Using electronic measurement equipment in winter.
Atkins, R.T., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1981, TD 81-01, 7p., ADA-148 795, 5 refs.
Electronic equipment, Cold weather performance, Measuring instruments, Semiconductors (materials), Thermal insulation, Cables (ropes), Winter, Temperature effects.

39-2093
Freezing and blocking of water pipes.
Carey, K.L., *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1982, TD 82-01, 11p., *ADA-148 943, 10 refs.*
Pipeline freezing, Water flow, Ice formation, Water pipes, Temperature effects, Countermeasures, Design, Ice control, Water pressure, Freezeup.

39-2094
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Carey, K.L., *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1983, TD 83-01, 11p., ADA-148 739, 7 refs.
Ice melting, Bubbling, Floating ice, Ice breaking, Ice control, Ports, Piers, Docks, Analysis (mathematics).

39-2095
Ice-blocked drainage: problems and processes.
Carey, K.L., *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1983, TD 83-02, 9p., ADA-148 738, 2 refs.
Pipeline freezing, Drainage, Culverts, Ice formation, Freezeup, Ice removal, Design, Countermeasures, Heat transfer, Winter maintenance.

39-2096
Engineer's pothole repair guide.
Eaton, R.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1984, TD 84-01 12p., ADA-148 736, 3 refs.
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Road maintenance, Winter maintenance, Damage, Engineering, Pavements, Potholes.

39-2097
Solving problems of ice-blocked drainage.
Carey, K.L., *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1984, TD 84-02, 9p., ADA-148 737, 4 refs.
Drainage, Ice formation, Pipeline freezing, Culverts, Ice removal, Ice control, Engineering, Countermeasures, Freezeup.

39-2098
Radar investigations above the trans-Alaska pipeline near Fairbanks.
Arcone, S.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1984, CR 84-27, 15p., ADA-150 303, 15 refs.
Delaney, A.J.
Radar echoes, Underground pipelines, Remote sensing, Freeze thaw cycles, Water table, Water content, Refraction, United States—Alaska—Fairbanks.
Radar and wide-angle reflection and refraction (WARR) profiles were obtained across three buried sections of the trans-Alaska pipeline near Fairbanks in late April 1983. A broadband, pulsed radar operating in the VHF (very high frequency) range was used. The surficial geology at the three sites consisted of gravel (dredge tailings), silt and alluvium, respectively, and the sites were marginally frozen or completely thawed. At the gravel site the pipe (approximately 2 m deep) and an underlying water table were easily visible. There was no radar signature of the pipe at the silt site: the WARR profiles verified the high absorption of the material. The response [illegible] marginal at the alluvium site. High absorption due to thawing or marginal freezing conditions about the pipe makes radar a generally poor choice for mapping freeze-thaw boundaries but a good choice for estimating material state and moisture content.

39-2099
Comparison of three compactors used in pothole repair.
Snelling, M.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1984, SR 84-31, 14p., ADA-149 937, 2 refs.
Eaton, R.A.
Road maintenance, Bituminous concretes, Compaction, Equipment, Density (mass/volume), Temperature effects, Potholes.
This report is a summary of the results of a compaction study using recycled hot mix asphalt concrete conducted during August 1983 in an indoor facility at CRREL in Hanover, New Hampshire. This study compared three kinds of compactors for optimum performance, and also considered such factors as temperature of the asphalt concrete mix, number of passes, size and depth of patches, and the number of lifts to fill the holes. Results showed that a vibratory roller and vibratory plate compactor could both compact patches to the desired 98% of laboratory density, but that a 200-lb lawn roller could not. Temperature of the hot recycled mix is critical, with 250F being the cut-off temperature. It was shown that if the mix is not compacted promptly after placement and is allowed to cool below 250F, proper compaction may not be attained.

39-2100
Heterogeneous ice nucleation. [Geterogennaia nukleatsiia l'da],
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Hailstones, Homogeneous nucleation, Heterogeneous nucleation, Nucleating agents, Ice crystal nuclei, Ice formation, Ice crystal growth, Electric charge.

39-2101
Artificial freezing and thawing of ground with thermopiles. [Okhlazhdenie i rasteplenie grunta s pomoshch'iu termosval],
Baaz, S.L., et al, *Gazovaia promyshlennost'*, Nov. 1984, No.11, p.11-12.
Sedelkin, V.M.
Buildings, Permafrost control, Pipelines, Thermopiles, Steel structures, Foundations, Petroleum industry, Permafrost beneath structures.

39-2102
Stabilization of temperature field of gas mains with "cold" satellite pipelines. [Stabilizatsiia temperaturnogo polia gazoprovodov s "kholodnymi" sputnikami],
Dvoiris, A.D., et al, *Gazovaia promyshlennost'*, Nov. 1984, No.11, p.44-46, In Russian.
Khankin, V.P.
Gas pipelines, Artificial freezing, Soil stabilization, Underground pipelines, Foundations, Bearing strength, Snow cover effect, Seasonal variations.

39-2103
Improving the safety of electric substations in areas of intensive snow accumulation. [O povyshenii nadezhnosti podstantsii v zonakh intensivnykh snegovykh otlozhenii],
Malevannaia, N.G., et al, *Elektricheskie stantsii*, Nov. 1984, No.11, p.42-44, In Russian.
Mal'tsev, G.S., Mamina, K.K.
Hoarfrost, Electric power, Power line icing, Snow accumulation, Snow loads, Power line supports, Steel structures.

39-2104
Technical requirements for installations and power lines when melting ice accretions. [Tekhnicheskie trebovaniia k ustanovkam i setiam pri plavke gololeda],
D'iakov, A.F., et al, *Elektricheskie stantsii*, Nov. 1984, No.11, p.62-66, In Russian. 6 refs.
Nikonets, L.A., Oliinyk, M.I.
Power line icing, Ice accretion, Power line supports, Ice loads, Ice prevention, Electric heating.

39-2105
Thorough preparation for winter. [Vsestoronne podgotovit'sia k zime],
Brik, M.I., *Lesnaia promyshlennost'*, 1984, No.9, p.2-3, In Russian.
Forestry, Tracked vehicles, Winter maintenance, Transportation, Snow roads, Ice roads, Equipment, Trafficability.

39-2106
Machines and forest environments. [Mashiny i lesnaia sreda],
Vinogorov, G.K., *Lesnaia promyshlennost'*, 1984, No.9, p.26-27, In Russian.
Forest soils, Tracked vehicles, Cryogenic soils, Soil erosion, Revegetation, Environmental impact, Snow cover effect.

39-2107
Efficient control of embankment thickness in construction on swamps. [Operativnyi kontrol' tolshchiny nasypei sooruzhaemykh na bolotakh],
IAromko, V.N., *Avtomobil'nye dorogi*, Nov. 1984, No.11, p.4-5, In Russian. 5 refs.
Swamps, Roads, Embankments, Earth dams, Earth fills, Organic soils, Soil compaction.

39-2108
Blasting technique of sinking earth-fill embankments to the bottom of swamps. [Vzryvnaia posadka nasypei na dno bolota],
Smirnov, A.G., et al, *Avtomobil'nye dorogi*, Nov. 1984, No.11, p.12-13, In Russian. 1 ref.
Birzhishkis, I.S., Bondar', P.P.
Swamps, Blasting, Roads, Organic soils, Embankments, Earth dams, Earth fills, Soil compaction, Settlement (structural).

39-2109
Geodetic surveys for road construction and permafrost phenomena. [Geodezicheskie dorozhnye raboty i merzlotnye iavleniia],
IUrkov, E.Kh., *Avtomobil'nye dorogi*, Nov. 1984, No.11, p.19, In Russian. 1 ref.
Roadbeds, Permafrost hydrology, Active layer, Taliks, Frost heave, Permafrost beneath structures, Soil freezing, Cryogenic structures.

39-2110
Time requirements for elimination of winter slipperiness. [O srokakh likvidatsii zimnei skol'zkosti],
Antonenko, I.V., et al, *Avtomobil'nye dorogi*, [illegible] 1984, No.11, p.26, In Russian. [illegible] ref.
Rasnikov, V.P.
Roads, Winter maintenance, Snow removal, Defrosting, Equipment, Glaze.

39-2111
AANBUS: the creation of a building system for Antarctica.
Incoll, P., Canberra, Australia. Department of Housing and Construction, [illegible] 1984, [illegible] p.
Cold weather construction, Stations, Buildings, Antarctica—Mawson Station, Antarctica—Casey Station, Antarctica—Davis Station.
[illegible] tica was developed and put into service. Notes on the climatic and logistic problems are included and a description of the buildings erected up to 1976 is provided for background to the account of the production of the current design. The "building system" is taken to include the form of the buildings themselves and the way they relate to each other and the site. The development of site planning and building design is therefore included in this paper. A full description of the elements of the building system as they [illegible] 1980 is also provided. (Auth.)

39-2112
Evaluation of rock anchors for use in Antarctica.
Taylor, P.T., et al, Australia. Department of Housing and Construction. Central Investigation and Research Laboratory, Nov. 1980, c65 leaves.
Truong, H.V.P.
Cold weather construction, Anchors, Low temperature tests.
The tests carried out in this investigation were concerned solely with anchors suitable for use in competent rock. Information on the nature of the near surface materials likely to be encountered at the three main Australian Antarctic bases of Mawson, Casey and Davies indicated that a competent rock could probably be reached in the majority of cases within reasonable depths. For the purposes of this investigation a minimum temperature of -15C was adopted as a realistic lower level. In addition some comment has been directed towards the practical aspects of employing the anchors in Antarctica and to the costs of the anchors. Interim reports on the progress of the evaluation programme were submitted in March, June and Oct. 1980. The results in those reports have been included in this final report. (Auth. mod.)

39-2113
Evaluation of chemical concrete for antarctic ground anchors; interim report.
Taylor, P.T., Oct. 1982, 7 leaves, Manuscript report.
Anchors, Concrete strength, Concrete curing, Chemical composition.
Subsequent to field investigations laboratory tests were conducted on frozen cement grout and another product based on magnesium phosphate which was found to be able to cure at temperatures below zero. The Vertipatch, a magnesium phosphate based grout, is capable of curing at temperatures to -10C which is below measured ground temperatures recorded during the summer months on the Antarctic bases. The indications are that it will not cure at -15C. The presence of salt water at an equivalent concentration to that found in ground at Davis does not appear to affect the cured properties of the grout as tested in model anchors. The strength of the Vertipatch, as measured by compression tests, is at about 28 MPa, considerably stronger than strengths obtained from frozen cement grout of about 5 MPa when cured at the same temperature of -5C. In laboratory tests on model anchors the frozen cement grout appeared to partially hydrate at -5C and gave variable results which were not typical of results obtained from field testing in Antarctica. (Auth.)

39-2114
Review of ground anchor tests and procedures.
Australia. Department of Housing and Construction. Antarctic Rebuilding Program, Aug. 1984, 23 leaves, 8 refs.
Anchors, Grouting, Cold weather construction.
This report provides a review and comment on the deep anchors used for holding down the buildings and other major structures under wind load. Anchor testing was carried out at selected Antarctic bases during the summer months of 1981-82, 82-83 and 83-84. These items are the current problem areas which require resolution. Anchor holes have become unstable during drilling at many of the locations where shallow depths of moraine overlie the rock. To ensure the integrity of the grout particularly in wet holes attempts were made to inject grout from the bottom of the anchor holes using a compressed air cylinder. Because of some practical operational difficulties the cylinder has been discarded and all anchors are still grouted by top pouring of grout. Because of concern that Portland cement grout may not cure in the sub-zero ground temperatures an alternative grout, MPV, has been proposed. It has superior curing and strength properties to that of Portland cement but causes some problems with respect to workability and placement. This report reviews and makes recommendations on these three main problem areas and highlights other associated areas where further consideration or work is warranted. (Auth. mod.)

39-2115
Ground anchor design guidelines.
Australia. Department of Housing and Construction. Antarctic Rebuilding Program, May 1984, 15 leaves.
Cold weather construction, Drilling, Anchors.
[illegible] holes, explaining drilling [illegible] problems and drill accessories. [illegible] requirements, tolerances [illegible]. Pedestal and grouting techniques [illegible] structural design alternatives [illegible].

39-2116
Design of the cladding system for use on antarctic projects.
Australia. Department of Housing and Construction. Antarctic [illegible], Aug. 1984, 39p., Refs. pass.
Cold weather construction, Wind velocity, Wind pressure.
[illegible]

Numerous sketches and computations are included, targeted mainly at safety considerations to provide strength in the buildings to withstand the antarctic climatic conditions. The primary concerns are the strong katabatic winds along the coast.

39-2117
Residential houses for rural construction in the North. [Zhilye doma dlia sel'skogo stroitel'stva na Severe],
Sakharov, A.N., Leningrad, Strolizdat, 1984, 261p., In Russian with English table of contents enclosed. 72 refs.
Residential buildings, Houses, Design, Permafrost beneath structures, Agriculture, Landscape types, Subarctic regions.

39-2118
Military tactics. [Taktika],
Reznichenko, V.G., et al, Moscow, Voennoe izdatel'stvo, 1984, 271p. (Pertinent p.143-151), In Russian with abridged English table of contents enclosed. 28 refs.
Military operation, Military transportation, Military equipment, Polar regions, Cold weather operation, Snow cover distribution, Snow depth, Subarctic landscapes, Trafficability, Alpine landscapes.

39-2119
Microphysics of *hailstone nucleation and growth.* [Mikrofizika zarozhdeniia i rosta grada],
Khorguani, V.G., Moscow, Gidrometeoizdat, 1984, 187p., In Russian with abridged English table of contents enclosed. 271 refs.
Hailstones, Hail clouds, Cloud seeding, Ice nuclei, Aerosols, Hail prevention, Hailstone electrification, Wind tunnels, Ice structure, Ice accretion.

39-2120
Final proceedings.
International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983, Washington, D.C., National Academy Press, 1984, 413p., Refs. passim. For individual papers see 39-2121 through 39-2181. DLC GB641.I6 1983
Permafrost, *Frost heave, Engineering geology,* Environmental protection, Climatic factors, Foundations, Embankments, Subsea permafrost, Pipelines, Permafrost preservation, Freeze thaw cycles, Geocryology, Ground ice.
A total of 276 contributed papers were published in the first volume of the proceedings. Reports of panel and *plenary* sessions, additional contributed papers and abstracts, summaries of *field trips, and lists of participants are* included in this second volume.

39-2121
Placing of deep pile foundations in permafrost in the USSR.
Vialov, S.S., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.16-17.
Pile driving, Permafrost, Foundations, Soil strength, Soil freezing, Loads (forces), Engineering geology, Pile structures, Adhesion, Design, Reinforced concretes.

39-2122
Study and practice on deep foundations *in permafrost* areas of China.
Ding, J., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.18-24, 22 refs.
Permafrost depth, Foundations, Pile driving, Soil freezing, Adhesion, Soil strength, Frost heave, Permafrost thermal properties, Active layer, Bearing strength.

39-2123
Design and performance of road and railway embankments *on permafrost.*
Esch, D.C., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.25-30, 27 refs.
Permafrost beneath structures, Roads, Railroads, Embankments, Engineering, Road *maintenance,* Design.

39-2124
Design and performance of water-retaining embankments in permafrost.
Sayles, F.H., MP 1850, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. *Final* proceedings, Washington, D.C., National Academy Press, 1984, p.31-42, Refs. p.40-42.
***Permafrost beneath* structures, Water retention, Dams, Ground thawing, Freeze thaw cycles, Maintenance, Design, *Permafrost thermal properties,* Artificial freezing, Soil freezing, Cold weather construction.**
To date, the water-retaining structures constructed and maintained on permafrost in North America have been designed and built using a combination of *soil mechanics principles for unfrozen* soils and unproven permafrost theory. In the USSR, at *least five sizeable hydroelectric* and water supply embankment dams as well as several small water supply embankment dams have been constructed and maintained on permafrost. The larger dams are understood to have performed well, but the smaller dams have been a mix of successes and failures. Specific criteria are still lacking for design, operation, and post-construction monitoring of water-retaining embankments founded on permafrost. The purpose of this *presentation is to review* the current practice, point out how it is deficient, and note what major problems *need attention.*

39-2125
Design and construction of deep foundations in permafrost: North American practice.
Ladanyi, B., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.43-50, 76 refs.
Pile *driving,* Permafrost, Foundations, Loads (forces), Soil freezing, Adhesion, Temperature effects, *Cold weather construction,* Design, Bearing strength, Frost heave.

39-2126
Principles of thermorheology of cryogenic soils.
Grechishchev, S.E., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.52-54, 3 refs.
Permafrost thermal properties, Cryogenic soils, Rheology, Soil creep, Frozen ground mechanics, Stresses, Strains, Flow rate.

39-2127
Current developments in China on frost-heave processes in soil.
Chen, X., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.55-60, Refs. p.58-60.
Frost heave, Ice lenses, Frozen ground mechanics, Soil water migration, Stresses, Frost penetration, Engineering, Frost action, Damage, Structures, Loads (forces).

39-2128
Thermally induced regelation: a qualitative discussion.
Miller, R.D., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.61-63, 11 refs.
Regelation, Frost heave, Ground ice, Temperature effects, Ice formation, Ice lenses, Ice models.

39-2129
Moisture migration in frozen soils.
Williams, P.J., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.64-66, 24 refs.
Frozen ground, Soil water migration, Frost heave, Ice formation, Stresses, Temperature effects, Temperature gradients, Ice lenses, Latent heat, Ice pressure, Water pressure.

39-2130
Status of numerical models for heat and mass transfer in frost-susceptible soils.
Berg, R.L., MP 1851, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.67-71, Refs. p.69-71.
Permafrost thermal properties, Frost resistance, Heat transfer, Mass transfer, Thermal conductivity, Frost heave, Mathematical models, Hydraulics, Latent heat, Moisture transfer, Boundary layer.

39-2131
Subsea permafrost distribution *on the Alaskan shelf.*
Sellmann, P.V., et al, MP 1852, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.75-82, 30 refs.
Hopkins, D.M.
Subsea permafrost, Permafrost distribution, Permafrost thermal properties, Permafrost depth, Ocean bottom, Water temperature, Shores, Seismic surveys, Bottom sediment, Chukchi Sea, Beaufort Sea.

39-2132
Perspective on the distribution of subsea permafrost on the Canadian Beaufort *Continental Shelf.*
Blasco, S.M., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. *Final* proceedings, Washington, D.C., National Academy Press, 1984, p.83-86, 7 refs.
Subsea permafrost, Permafrost distribution, Bottom sediment, Ground ice, Seismic surveys, Stratigraphy, Acoustic measurement, Models, Beaufort Sea.

39-2133
Geophysical Techniques for subsea permafrost investigations.
Hunter, J.A.M., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.88-89, 1 ref.
Subsea permafrost, Geophysical surveys, Ground ice, Cryogenic soils, Seismic refraction, Velocity.

39-2134
Subsea permafrost and petroleum development.
Jahns, H.O., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.90-92, 3 refs.
Subsea permafrost, Engineering, Petroleum industry, Heat transfer, Pipelines, Ocean bottom, Offshore *drilling,* Salt water.

39-2135
Geotechnical and engineering significance of subsea permafrost.
Hayley, D.W., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.93-95, 4 refs.
Subsea permafrost, Offshore structures, Engineering geology, Shear strength, Permafrost beneath structures, Exploration, Stability.

39-2136
Pipelines *in the* Northern USSR.
Ferrians, O.J., Jr., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.98-99.
Permafrost beneath structures, Pipelines, Permafrost preservation, *Cold weather construction, Hot oil* lines.

39-2137
Hot-oil and chilled-gas pipeline *interaction with* permafrost.
Mathews, A.C., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.101-105.
Permafrost thermal properties, Underground pipelines, Thermal regime, Frost heave, Ground thawing, Pipeline insulation, Thermal insulation, Subsea permafrost.

39-2138
Pipeline workpads in Alaska.
Metz, M.C., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.106-108.
Permafrost beneath roads, Thermal insulation, Permafrost thermal properties, Ground thawing, Embankments, Pipelines, Gravel, Construction materials.

39-2139
Performance of the trans-Alaska oil pipeline.
Johnson, E.R., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.109-111, 19 refs.
Permafrost thermal properties, Hot oil lines, Underground pipelines, Settlement (structural), Ground thawing, Maintenance, Pipeline supports, United States—Alaska.

39-2140
Development and environmental protection in the permafrost zone of the USSR: a review.
Grave, N.A., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.116-124, Refs. p.121-124.
Permafrost preservation, Environmental protection, Geocryology, Engineering, Environmental impact, Pipelines, Drilling, Thermal insulation, Tundra.

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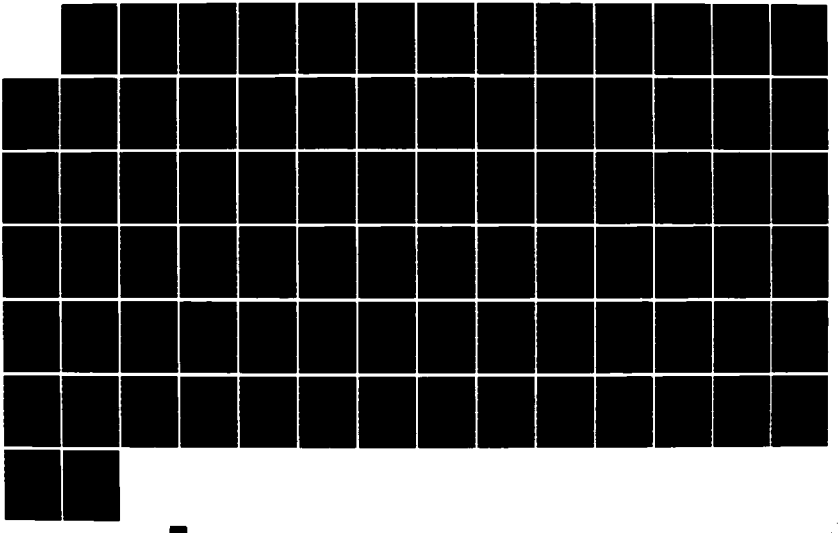

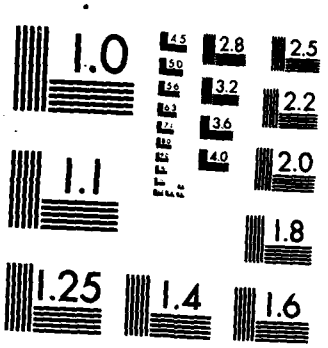

39-2141
Regulatory responsibilities in permafrost environments of Alaska from the perspective of a federal land manager.
McVee, C.V., et al, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.125-128.
Tileston, J.V.
Permafrost preservation, Environmental protection, Natural resources, Legislation, United States—Alaska.

39-2142
Terrain and environmental problems associated with exploratory drilling, northern Canada.
French, H.M., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.129-132, 26 refs.
Permafrost preservation, Environmental protection, Exploration, Drilling, Ecology, Ground thawing, Environmental impact, Natural resources, Tundra.

39-2143
Petroleum exploration and protection of the environment on the National Petroleum Reserve in Alaska.
Brewer, M.C., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.133-134, 4 refs.
Tundra, Environmental protection, Permafrost preservation, Exploration, Natural resources, Petroleum industry, Roads, Drilling.

39-2144
Terrain sensitivity and recovery in arctic regions.
Webber, P.J., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.135-136, 3 refs.
Permafrost preservation, Environmental impact, Land reclamation, Tundra, Environmental protection, Human factors, Permafrost thermal properties, Carbon dioxide, Forecasting.

39-2145
Study of climate change in the permafrost regions of China: a review.
Cheng, G., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.139-144, 12 refs.
Climatic changes, Permafrost distribution, Polygonal topography, Snow line, Mountains, Paleoclimatology, Pleistocene, Pollen, China.

39-2146
Response of Alaskan permafrost to climate.
Osterkamp, T.E., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.145-152, 19 refs.
Permafrost thermal properties, Climatic factors, Mass transfer, Heat transfer, Thermal regime, Vegetation, Air temperature, Precipitation (meteorology), Frozen ground temperature, United States—Alaska.

39-2147
Climate change and other effects on permafrost.
Smith, M., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.153-155, 8 refs.
Permafrost thermal properties, Climatic changes, Thermal regime, Frozen ground temperature, Air temperature, Soil temperature, Active layer.

39-2148
Reconstructions and future predictions of the effects of climate change.
Gray, J.T., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.156-159, 25 refs.
Climatic changes, Permafrost distribution, Soil temperature, Vegetation, Paleoclimatology, Forecasting.

39-2149
Major trends in the development of Soviet permafrost research.
Mel'nikov, P.I., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.163-166.
Permafrost, Geocryology, Research projects, Heat transfer, Soil temperature, Vegetation, Air temperature, Geothermy, Heat flux, Water supply.

39-2150
Drilling and operation of gas wells in the presence of natural gas hydrates.
Gritsenko, A.I., et al, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.167-172, 7 refs.
Makogon, IU.F.
Permafrost, Drilling fluids, Gas wells, Heat transfer, Hydrates, Hydrocarbons, Natural gas, Temperature effects.

39-2151
Impact of installations for the extraction and transport of gas on permafrost conditions in western Siberia and comprehensive engineering geology forecasting of resultant changes.
Zakharov, IU.F., et al, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.173-176.
Kosukhin, L.D., Nanivskiĭ, E.M.
Permafrost, Engineering geology, Natural gas, Heat transfer, Settlement (structural), Transportation, Natural resources, Forecasting, Geocryology.

39-2152
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Geocryology, Permafrost preservation, Engineering geology, Piles, Ground thawing, Foundations, Loads (forces), Ground ice, Structures, Bearing strength.

39-2153
Construction of deep pile foundations in permafrost in the USSR—a summary.
Sadovskiĭ, A.V., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.186-187.
Permafrost, Pile driving, Foundations, Cold weather construction, Loads (forces), Soil strength, Bearing strength, Adhesion, Temperature effects.

39-2154
Cryogenic processes associated with developments in the permafrost zone.
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Geocryology, Permafrost distribution, Periglacial processes, Solifluction, Frost heave, Thermokarst, Thermal effects, Climatic factors, Vegetation, Environmental impact, Human factors.

39-2155
Physicochemical nature of the formation of unfrozen water in frozen soils.
Akimov, IU.P., et al, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.195-199, 11 refs.
Ershov, E.D., Cheverev, V.G.
Permafrost hydrology, Frozen ground, Soil water, Unfrozen water content, Soil chemistry, Soil physics, Analysis (mathematics).

39-2156
Effects of variations in the latent heat of ice fusion in soils on interaction of boreholes with permafrost.
Anisimov, M.A., et al, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.200-203, 10 refs.
Tankaev, R.U., Ulantsev, A.D.
Permafrost thermal properties, Boreholes, Latent heat, Ground ice, Ice melting, Temperature effects.

39-2157
Mass transfer in the snow cover of central Yakutia.
Are, A.L., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.204-207, 12 refs.
Snow cover, Mass transfer, Snow temperature, Wind velocity, Water vapor, Vapor diffusion, Temperature effects, Sublimation.

39-2158
Possible applications of foam cements in protecting the environment in connection with well drilling.
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Permafrost preservation, Well casings, Environmental protection, Gas wells, Oil wells, Cement admixtures, Thermal insulation, Thermal conductivity, Ground thawing, Drilling.

39-2159
Investigation of areas of icing (naled) formation and subsurface water discharge under permafrost conditions using surface geophysical techniques.
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Afanasenko, V.E., Timofeev, V.M.
Naleds, Ice formation, Permafrost hydrology, Subsurface drainage, Icing, Seasonal variations, Geophysical surveys.

39-2160
Principles of terrain classification for pipeline construction.
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Gorskaia, G.S., Spiridonov, V.V.
Permafrost, Pipelines, Topographic features, Engineering geology, Vegetation, Classifications, Hydrology, Geomorphology, Surface properties.

39-2161
On the physicochemical properties of the surface of dispersed ice (snow).
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Ice physics, Ice composition, Solutions, Ice surface, Snow physics, Snow composition, Absorption, Chemical analysis, Temperature effects, Organic chemistry.

39-2162
Thermal regime of permafrost soils in the USSR.
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Permafrost thermal properties, Heat flux, Ground thawing, Freeze thaw cycles, Radiation balance, Heat balance, Soil temperature, Seasonal variations.

39-2163
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Inozemtsev, V.K.
Soil compaction, Ground thawing, Loads (forces), Compressive properties, Soil mechanics, Settlement (structural), Dynamic properties, Rheology, Deformation, Porosity, Impact strength.

39-2164
Theory of desiccation of unconsolidated rocks in areas with . gative temperatures.
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Rocks, Desiccation, Ice sublimation, Thermodynamics, Soil water, Temperature effects, Analysis (mathematics), Theories, Experimentation.

39-2165
Thermal interaction between pipelines and the environment.
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Interfaces, Ground thawing, Pipeline insulation, Underground pipelines, Thermodynamics, Environmental protection, Geocryology, Frozen ground, Temperature control, Analysis (mathematics), Gas pipelines, Thermal insulation.

39-2166
Deformation of freezing, thawing, and frozen rocks.
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Frozen ground mechanics, Frozen rocks, Ground thawing, Soil freezing, Heat transfer, Mass transfer, Rheology, Geocryology, Deformation, Frozen ground, Soil creep, Analysis (mathematics).

39-2167
Migration of elements in water in taiga-permafrost landscapes.
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Permafrost hydrology, Soil water, Taiga, Water chemistry, Geochemistry, Chemical analysis, Migration.

39-2168
Investigation of the deformation of clayey soils resulting from frost heaving and thawing in foundations due to loading.
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Fursov, V.V., Baluiura, M.V.
Clay soils, Frost heave, Ground thawing, Foundations, Loads (forces), Freeze thaw cycles, Deformation, Frost penetration, Settlement (structural), Soil compaction.

39-2169
Artificial ice masses in Arctic seas.
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Voĭtkovskiĭ, K.F., Kamenskiĭ, R.M., Konstantinov, I.P.
Artificial freezing, Freezing rate, Ice strength, Artificial islands, Ice formation, Foundations, Offshore structures, Sea water freezing, Frozen ground, Construction materials, Temperature effects, Compressive properties.

39-2170
Application of microwave energy for accelerating excavation in frozen soil.
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Shonin, O.B., Riabets, N.I., Petrov, V.S.
Frozen ground, Excavation, Heating, Microwaves, Ground thawing, Permafrost, Time factor, Engineering geology.

39-2171
Cryogeothermal problems in the study of the Arctic Ocean.
Neizvestnov, IA.V., et al, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.273-277, 13 refs.
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Subsea permafrost, Ground ice, Bottom sediment, Geothermy, Hydrodynamics, Geocryology, Natural resources, Pleistocene.

39-2172
Investigations into the compaction of thawing earth materials.
Pakhomova, G.M., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.278-281, 14 refs.
Permafrost, Soil compaction, Ground thawing, Foundations, Settlement (structural), Buildings, Analysis (mathematics).

39-2173
Thermal regime of thermokarst lakes in central Yakutia.
Pavlov, A.V., et al, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.282-285, 15 refs.
Are, F.E.
Permafrost, Thermokarst lakes, Thermal regime, Taiga, Radiation balance, Heat transfer, Temperature effects, Seasonal variations.

39-2174
Prediction of construction characteristics of sluiced materials used in foundations under permafrost conditions and in severe climates.
Poleshuk, V.L., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.286-289, 4 refs.
Permafrost preservation, Foundations, Sluices (hydraulic engineering), Engineering geology, Construction materials.

39-2175
Analog methods for determining long-term deformability of permafrost materials.
Roman, L.T., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.290-294, 6 refs.
Frozen ground strength, Permafrost physics, Rheology, Settlement (structural), Peat, Unfrozen water content, Deformation, Temperature effects, Stresses, Time factor, Buildings.

39-2176
Resistivity logging of frozen rocks.
Snegirev, A.M., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.295-299, 19 refs.
Frozen rocks, Electrical resistivity, Permafrost physics, Boreholes, Frozen ground physics.

39-2177
Stress-strain condition and the assessment of slope stability in areas of complex geological structure under various temperature regimes.
Ukhov, S.B., et al, International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.300-305, 8 refs.
Gul'ko, E.F., Merzliakov, V.P., Kotov, P.B.
Permafrost physics, Stress strain diagrams, Slope stability, Thermodynamics, Frozen ground mechanics, Geological structures, Analysis (mathematics).

39-2178
New technique for determining the static fatigue limit of frozen ground.
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Ivashchenko, I.N., Shusherina, E.P.
Frozen ground strength, Fatigue (materials), Loads (forces), Frozen ground physics, Structural analysis, Temperature effects, Cryogenic textures.

39-2179
Permafrost beneath the Arctic seas.
Zhigarev, L.A., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.311-314, 13 refs.
Subsea permafrost, Marine deposits, Permafrost distribution, Water temperature, Bottom sediment, Climatic factors, Offshore structures, Lacustrine deposits, Arctic Ocean.

39-2180
Cryopediments in the Bighorn Canyon area, south-central Montana.
Nelson, G.E., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.327-332, 13 refs.
Soil erosion, Geocryology, Frost action, Periglacial processes, Slope orientation, Rocks, Wedges, Pleistocene.

39-2181
Electrical thawing of frozen soils.
Jumikis, A.R., International Conference on Permafrost, 4th, Fairbanks, Alaska, July 17-22, 1983. Final proceedings, Washington, D.C., National Academy Press, 1984, p.333-337, 7 refs.
Permafrost physics, Frozen ground strength, Ground thawing, Electric heating, Excavation, Foundations, Engineering geology, Equipment.

39-2182
Modular construction of objects for oil and gas industry. [Komplektno-blochnyĭ metod organizatsii stroitel'stva ob"ektov neftianoĭ i gazovoĭ promyshlennosti],
Shmal', G.I., *Ekonomika stroitel'stva*, Oct. 1984, No.10, p.3-7, In Russian.
Paludification, Modular construction, Taiga, Permafrost distribution, Industrial buildings.

39-2183
X-ray studies of the soil-lime system used in clay soil stabilization. [Rentgenograficheskie issledovaniia sistemy grunt-izvest' pri ukreplenii glinistykh gruntov],
Levchenko, A.V., et al, *Leningrad. Universitet. Vestnik*, Dec. 1984, 24(4), p.26-35, In Russian with English summary.
Knat'ko, V.M.
Clay soils, Soil stabilization, Soil cement, Clay minerals, X ray analysis.

39-2184
Daily rhythm of flowering of high altitude plants in east Pamir. [Sutochnyĭ ritm tsveteniia vysokogornykh rasteniĭ Vostochnogo Pamira],
Novozhilova, N.N., *Botanicheskiĭ zhurnal*, Nov. 1984, 69(11), p.1502-2509, In Russian. Refs. p.1508-1509.
Plant ecology, Vegetation patterns, Plant physiology, Ecosystems, Landscape types, Alpine landscapes, Cryogenic soils.

39-2185
Cryophytic-steppe communities in the middle reaches of the Amguema River (the isthmus of the Chukotskiy Peninsula). [Kriofitno-stepnye soobshchestva srednego techeniia r. Amguemy (peresheek Chukotskogo poluostrova)],
Slinchenkova, E.IU., *Botanicheskiĭ zhurnal*, Nov. 1984, 69(11), p.1509-1519, In Russian. 8 refs.
Steppes, Plant ecology, Plant physiology, Tundra, Ecosystems.

39-2186
Theory of inelastic relaxation of ice. [Teoriia neuprugoĭ relaksatsii l'da],
Petrenko, V.F., et al, *Fizika tverdogo tela*, Sep. 1984, 26(9), p.2681-2688, In Russian. 16 refs.
Ryzhkin, I.A.
Ice crystals, Ice physics, Relaxation (mechanics), Mathematical models.

39-2187
Growth and development of Arctic plants. [Rost i razvitie arkticheskikh rasteniĭ],
Tyrtikov, A.P., *Moskovskoe obshchestvo ispytatelei prirody. Biulleten'. Otdel biologicheskiĭ*, Nov.-Dec. 1984, 89(6), p.86-97, In Russian. Refs. p.96-97.
Tundra, Vegetation patterns, Plant physiology, Arctic regions, Snow cover effect, Geocryology, Plant ecology, Ecosystems.

39-2188
Oblique aerial surveying technique for geographic studies. [Primenenie perspektivnoĭ aerofotos"emki dlia geograficheskikh issledovaniĭ],
Gel'man, R.N., et al, *Geodeziia i kartografiia*, Nov. 1984, No.11, p.35-37, In Russian. 2 refs.
Kirpichenkov, S.IA.
Alpine landscapes, Stereoscopic cameras, Aerial surveys, Glacier ice, Glacier flow, Snow cover distribution, Accuracy, Snow depth, Measuring instruments.

39-2189
Steel structures for the Far North need to be improved. [O neobkhodimosti povysheniia kachestva stal'nykh konstruktsiĭ dlia raĭonov Kraĭnego severa],
Filippov, V.V., et al, *Montazhnye i spetsial'nye raboty v stroitel'stve*, Aug. 1984, No.8, p.13-14, In Russian.
Posel'skiĭ, F.F., Kalagirev, IU.G.
Steel structures, Welding, Frost resistance, Defects.

39-2190
Power house plant installation manual for prefabricated antarctic buildings and reticulated services.
Australia. Department of Housing and Construction, Canberra, 1981, n.p., 2nd ed.
Cold weather construction, Electric power, Utilities, Buildings, Manuals.
Assuming relevant skills are possessed by those engaged in installation work, the manual is a supplement to the detailed power plant drawings at the sites. For Mawson, Casey, and Davis it addresses alternator sets, boilers, exhaust flues, fuel supply, water supply, and electrical installations.

39-2191
Rebuilding Australia's antarctic stations. Statement of evidence to the Parliamentary Standing Committee on Public Works.
Australia. Department of Housing and Construction Canberra, Feb. 1981, 24p. + attachments.
Cold weather construction, Stations, Buildings, Utilities.
The proposal is long-term, covering a ten year project for Mawson, Davis, and Casey. It covers most aspects of city planning: electricity, waste disposal, potable water supply, road and building layouts, environment concerns. Additionally, cargo handling areas, helipads, laboratories, messing, sleeping, and recreation facilities are included. Most of these are depicted in the accompanying drawings and plans.

39-2192
Rebuilding Australia's antarctic stations. Supplementary statement of evidence to the Parliamentary Standing Committee on Public Works.
Australia. Department of Science and Technology, Canberra, Mar. 1981, 15p.
Cold weather construction, Logistics, Research projects.
Emphasis is placed on the need for expanding the logistics program to include air transport from Australia to Antarctica, to either Casey or Mawson. The continuance of high quality of science programs at these stations and Davis with the possibility of establishing a fourth location strengthens Australia's antarctic territorial claims.

39-2193
Some aspects of antarctic engineering. [Algunos aspectos de la ingeniería antártica],
Retamal, E., Política antártica de Chile, edited by F. Orrego Vicuña, M.T. Infante Caffi, and P. Armanet Armanet, Santiago de Chile, Universidad de Chile, 1984, p.147-159, In Spanish. 3 refs.
Ice deformation, Ice cover strength, Bearing strength, Snow strength, Compressive properties.
The physical environment of Antarctica is described and its economic potential reviewed. Stations representing Chile and other nations are shown on a map and their histories given briefly. Engineering problems are discussed, with special reference to ice and snow characteristics. Tests of ice and snow resistance and deformation are described and the results are tabulated. Applications to airplane landing are indicated.

39-2194
Antarctic infrastructure and policy of access to the continent. [Infraestructura antártica y política de acceso al continente],
Lopetegui Torres, J., Política antártica de Chile, edited by F. Orrego Vicuña, M.T. Infante Caffi, and P. Armanet Armanet, Santiago de Chile, Universidad de Chile, 1984, p.161-177, In Spanish. 2 refs.
Aircraft landing areas, Ice runways, Snow compaction, Ice cover, Antarctica.
The climatic and geological differences between the Antarctic Peninsula and the continent are briefly described, and the basic framework of stations, ports, runways—including ski-ways, snow-ways and the landing strips made with sea ice—that facilitate access to Antarctica are discussed. The history of antarctic air navigation is reviewed, as are current problems inherent to flying in Antarctica, such as intense cold, terrestrial magnetism, communications blockage, and abrupt climatic changes. Safety problems ensuing from the dispute for authority over antarctic skies among different nations are also considered.

39-2195
Simple model of the ocean climate.
Verbitskiĭ, M.IA., et al, *Akademiia Nauk SSSR. Doklady. Earth science sections*, Mar.-Apr. 1983, 269(1-6), p.198-200, Translated from its Doklady, 1983, Vol.269. 6 refs.
Chalikov, O.V.
Ice sheets, Ocean environments, Air water interactions, Ice air interface, Ice water interface, Heat transfer, Mathematical models, Thermal regime, Turbulence.

39-2196
Thermodynamic model of seasonal evolution of the ocean-atmosphere system.
Kagan, B.A., et al, *Doklady. Earth science sections*, Mar.-Apr. 1983, 269(1-6), p.201-204, Translated from Akademiia Nauk SSSR. Doklady, 1983, Vol.269. 4 refs.
Riabchenko, V.A., Safray, A.S.
Ocean environments, Air water interactions, Sea ice distribution, Land ice, Thermodynamics, Mathematical models, Heat transfer, Water temperature, Air temperature.

39-2197
Frame structure of inland- and combined-navigation ships. [Konstruktsiia korpusa sudov vnutrennego i smeshannogo plavaniia],
Protopopov, V.B., et al, Leningrad, Sudostroenie, 1984, 375p. (Pertinent p. 242-246 and 293-301). In Russian with abridged English table of contents enclosed. 60 refs.
Svechnikov, O.I., Egorov, N.M.
Icebreakers, Ice navigation, Ships, Air cushion vehicles, Hydrofoil craft, Design.

39-2198
Dynamic problem of interaction between an elastic punch and a fluid through a thin cover.
Kovalenko, E.V., *Applied mathematics and mechanics*, 1981 (Publ. Apr. 82), 45(2), p.244-251, Translated from Prikladnaia matematika i mekhanika. 6 refs.
Ice surface, Elastic properties, Hydrodynamics.

39-2199
Life-forms of forest phytocenoses. [Zhiznennye formy lesnykh fitotsenozov],
Krylov, A.G., Leningrad, Nauka, 1984, 184p., In Russian with abridged English table of contents enclosed. Refs. p.160-168.
Forest soils, Cryogenic soils, Alpine landscapes, Taiga, Plant ecology, Ecosystems, Plant physiology, Climatic factors, Classifications.

39-2200
Advanced types of ships and their seafaring qualities. [Perspektivnye tipy sudov i ikh morekhodnye kachestva],
Panin, IU.I., ed, *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Trudy*, 1983, Vol.285, 137p., In Russian. For selected papers see 39-2201 through 39-2205. Refs. passim.
Ice loads, Ice navigation, Air cushion vehicles, Icebreakers, Tanker ships, Ships, Subglacial navigation, Cargo, Impact strength, Research projects, Steel structures, Mathematical models, Design.

39-2201
Studying the merit of building multi-purpose feederlighters for use in the Arctic and in reserve lines. [Issledovanie tseleseobraznosti sozdaniia fidernogo likhterovoza mnogotselevogo naznacheniia dlia ekspluatatsii v Arktike i na liniiakh doispol'zovaniia],
Miroshnichenko, I.P., et al, *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Trudy*, 1983, Vol.285, p.3-15, In Russian. 4 refs.
Ships, Ice navigation, Ice conditions, Drift, Cargo.

39-2202
Determining the mass of metallic frames of dry-cargo ships used in ice navigation, at the initial stage of their design, allowing for the strength of steel. [Opredelenie massy metallicheskogo korpusa sukhogruznykh sudov ledovogo plavaniia na nachal'noĭ stadii proektirovaniia s uchetom prochnostnykh kharakteristik stali],
Karavanov, S.B., *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Trudy*, 1983, Vol.285, p.89-95, In Russian. 5 refs.
Ice loads, Ice navigation, Ships, Steel structures, Design, Impact strength.

39-2203
Mathematical model of the movement of a ship in ice, when led by an icebreaker. [Matematicheskaia model' dvizheniia sudna vo l'dakh pod provodkoĭ ledokola],
Tsoĭ, L.G., et al, *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Trudy*, 1983, Vol.285, p.95-99, In Russian. 6 refs.
Bogdanov, A.A.
Ice navigation, Icebreakers, Ships, Ice loads, Impact strength, Mathematical models.

39-2204
Block-diagram for designing air-cushion vessels and floats for the Far North and Far East. [Logicheskoe derevo sozdaniia sudov i pontonov na vozdushnoĭ podushke dlia raboty v usloviiakh Kraĭnego Severa i Dal'nego Vostoka],
Khmurin, V.M., *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Trudy*, 1983, Vol.285, p.106-110, In Russian. 3 refs.
Ships, Ice navigation, Floating structures, Air cushion vehicles, Transportation, Cargo, Design.

39-2205
Architectural and structural design of submarine transport vessels. [Arkhitekturno-konstruktivnyĭ tip podvodnykh transportnykh sudov],
Evdokimov, G.P., *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Trudy*, 1983, Vol.285, p.110-118, In Russian.
Marine transportation, Subglacial navigation, Ships, Tanker ships, Ice navigation, Design.

39-2206
Utilization of heat on diesel-electric icebreakers. [Utilizatsiia tepla na dizel'-elektricheskikh ledokolakh],
Chernen'kiĭ, V.A., *Leningrad. Tsentral'nyĭ nauchno-issledovatel'skiĭ institut morskogo flota. Trudy*, 1983, Vol.289, p.27-31, In Russian.
Ice navigation, Icebreakers, Marine transportation, Fuels, Heating.

39-2207
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Jeffries, M.O., *Canada. Defence Research Establishment Pacific. Contractors report*, Sep. 1983, 83-27, 31p., Refs. p.26-28.
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39-2208
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Jeffries, M.O., *Canada. Defence Research Establishment Pacific. Contractors report*, Dec. 1983, 83-56, 37p., Refs. p.34-37.
Ice cores, Isotope analysis, Ice structure, Ice growth, Origin, Oxygen isotopes, Ice shelves, Sea ice, Canada—Northwest Territories—Ellesmere Island.

39-2209
Specific electrolytic conductivity-salinity, oxygen-18 and tritium variations in the Ward Hunt and Milne Ice Shelves: a study of their origin, structure and behaviour.
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39-2210
Vitrification of pure liquid water by high pressure jet freezing.
Mayer, E., et al, *Nature*, Aug. 1982, 298(5876), p.715-718, 30 refs.
Brüggeller, P.
Vitreous ice, Ice crystal structure, Freezing, Pressure, X ray diffraction, Hydraulic jets.

39-2211
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Turco, R.P., et al, *Nature*, Aug. 26-Sep. 1, 1982, 298(5877), p.830-832, 17 refs.
Toon, O.B., Whitten, R.C., Cicerone, R.J.
Ice nuclei, Aerosols, Smoke generators, Nucleating agents, Spacecraft, Condensation trails, Particle size distribution, Climatic changes.

39-2212
Comment on "Mars residual north polar cap: Earth-based spectroscopic confirmation of water ice as a major constituent and evidence for hydrated minerals" by Roger N. Clark and Thomas B. McCord.
Jakosky, B.M., *Journal of geophysical research*, May 10, 1983, 88(B5), p.4329-4330, For article being commented on see 37-2175. 19 refs.
Extraterrestrial ice, Mars (planet), Absorption, Spectra, Minerals.

39-2213
Overview of acid rain monitoring activities in North America.
Wisniewski, J., et al, *American Meteorological Society. Bulletin*, May 1982, 63(5), p.598-618, 32 refs.
Kinsman, J.D.
Air pollution, Snowfall, Rain, Chemical properties, Gases, Frost, Fog, Precipitation (meteorology), Acidity.

39-2214
Study of the effect of size on ice nucleation in the aerodynamic range of particles.
Prodi, F., et al, *Journal of applied meteorology*, July 1982, 21(7), p.945-952, 19 refs.
Santachiara, G., Prodi, V.
Ice nuclei, Aerosols, Grain size, Nucleating agents, Condensation, Temperature effects, Spectroscopy, Particles.

39-2215
Reduction of residential heating and cooling requirements possible through atmospheric seeding with ice-forming nuclei.
Detwiler, A., et al, *Journal of applied meteorology*, July 1982, 21(7), p.1045-1047, 12 refs.
Cho, H.
Cloud seeding, Ice nuclei, Weather modification, Ice formation, Cost analysis, Buildings, Heating, Cooling, Cloud cover.

39-2216
Measurements of cloud nuclei in the effluents from launches of liquid- and solid-fueled rockets.
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Radke, L.F., Eltgroth, M.W.
Ice nuclei, Aerosols, Supercooled clouds, Nucleating agents, Spacecraft, Distribution, Supersaturation.

39-2217
Experimental studies of nucleation by dry ice.
Horn, R.D., et al, *Journal of applied meteorology*, Oct. 1982, 21(10), p.1567-1570, 11 refs.
Finnegan, W.G., DeMott, P.J.
Ice nuclei, Nucleating agents, Dry ice (trademark), Cloud seeding, Spectra, Cloud chambers.

39-2218
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Cox, S.K.
Solar radiation, Measuring instruments, Ice conditions, Pack ice, Cloud cover, Ice breakup, Models.

39-2219
Control of bearing friction in the controllable-pitch propellers of polar-class icebreakers.
Dufrane, K.F., et al, *Lubrication engineering*, Dec. 1982, 39(12), p.762-766, 3 refs.
Langrock, D.G.
Icebreakers, Propellers, Friction, Corrosion, Sea water, Countermeasures.

39-2220
Problems of physical geography. Selected works. [Problemy fizicheskoĭ geografii. Izbrannye trudy].
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39-2221
Stability of field-protecting vegetation. [Ustoĭchivost' polezashchitnykh nasazhdeniĭ].
Popova, O.S., et al, Krasnoyarsk, 1984, 130p., In Russian with abridged English table of contents enclosed. Refs. p.124-130.
Popov, V.P.
Steppes, Protective vegetation, Forest strips, Mountain soils, Deserts, Cryogenic soils, Soil erosion, Wind erosion.

39-2222
Improving the methods of introduction of modular construction on oil fields of western Siberia. [Sovershenstvovanie metodov primeneniia blochno-komplektnykh ustroĭstv na neftianykh promyslakh Zapadnoĭ Sibiri].
Biachkov, A.I., et al, *Stroitel'stvo truboprovodov*, Feb. 1985, No.2, p.5-6, In Russian.
Kagan, IA.M.
Taiga, Paludification, Modular construction, Permafrost beneath structures, Construction materials, Transportation.

39-2223
Mobile-crew flow-type method of building the transcontinental pipeline Urengoy-Pomary-Uzhgorod. [Potochno-skorostnoĭ metod stroitel'stva transkontinental'nogo gazoprovoda Urengoĭ-Pomary-Uzhgorod].
Sudobin, G.N., et al, *Stroitel'stvo truboprovodov*, Feb. 1985, No.2, p.12-13, In Russian.
Earthwork, Foundations, Gas pipelines, Swamps, Pipe laying, Anchors, Thermal insulation, Frozen ground strength, Permafrost beneath structures.

39-2224
Complex of structures designed for gas supply to the Noril'sk mining and metallurgical combine. [Kompleks sooruzheniĭ po nadezhnomu gazosnabzheniiu Noril'skogo gorno-metallurgicheskogo kombinata].
Zinevich, A.M., et al, *Stroitel'stvo truboprovodov*, Feb. 1985, No.2, p.14-15, In Russian.
Solifluction, Gas pipelines, Paludification, Foundations, Supports, Piles, Frost heave, Slope processes, Permafrost beneath structures, Steel structures.

39-2225
Computer programs for controlling quality of construction. [Upravlenie kachestvom s primeneniem vychislitel'noĭ tekhniki].
Paleĭ, L.A., et al, *Stroitel'stvo truboprovodov*, Feb. 1985, No 2, p.15-17, In Russian.
Lukashov, V.N.
Gas pipelines, Welding, Permafrost beneath structures, Computer applications, Design.

39-2226
Combined mechanization schemes for construction of industrial pipelines. [Skhemy kompleksnoĭ mekhanizatsii stroitel'stva promyslovykh truboprovodov], *Stroitel'stvo truboprovodov*, Feb. 1985, No.2, p.23-26, In Russian.
Roads, Swamps, Pipe laying, Pavements, Foundations, Piles, Earthwork, Prefabrication, Frozen ground strength, Site survey, Thermal insulation, Transportation, Construction equipment.

39-2227
Determining thawing depth of ice-bearing ground beneath pile foundations of modular buildings. [Opredelenie glubiny ottaivaniia l'doporodnogo grunta svaĭnogo fundamenta ob"emno-blochnogo doma].
Varshavskiĭ, I.P., et al, *Stroitel'stvo truboprovodov*, Feb. 1985, No.2, p.30-31, In Russian. 4 refs.
Tarasov, A.G.
Modular construction, Residential buildings, Foundations, Piles, Permafrost beneath structures.

39-2228
Bearing strength of open-ended tubular piles in permafrost. [Nesushchaia sposobnost' trubchatykh svaĭ s otkrytym kontsom v vechnomerzlykh gruntakh].
Garanin, L.I., *Stroitel'stvo truboprovodov*, Feb. 1985, No.2, p.37-38, In Russian.
Foundations, Piles, Steel structures, Buildings, Bearing strength, Permafrost.

39-2229
Casey domestic building, Vol.1. AANBUS erection manual for prefabricated antarctic buildings and reticulated services.
Australia. Department of Transport and Construction, Canberra, 1982, var. p.
Cold weather construction, Floors, Foundations, Panels, Walls, Insulation.
The manual explains the purpose of various materials and techniques, and *suggests some appropriate erection procedures.* Thus, when on-site decisions are being made, the intentions of the designers and the importance of some design features should be understood. The manual does not seek to be exhaustive in detailing erection procedures. It is intended to supplement the site construction drawings by outlining the general erection procedures and isolating particular areas where the drawings are over-complex for erection purposes.

39-2230
Casey site services, Vol.1. AANBUS erection manual for prefabricated antarctic buildings and reticulated services.
Australia. Department of Transport and Construction, Canberra, 1982, var. p.
Cold weather construction, Utilities, Bridges, Manuals, Antarctica—Casey Station.
The manual gives specific details for the erection, installation, maintenance, and trouble shooting of equipment and structures at Casey Station. Step by step instructions for erection and tie-down of structures, bridges, towers, and cables are given along with arrangements for structural support members.

39-2231
Halon fire protection system for store buildings. AANBUS erection manual for prefabricated antarctic buildings and reticulated services.
Australia. Department of Transport and Construction, Canberra, 1982, var. p.
Cold weather construction, Buildings, Fires, Antarctica—Mawson Station, Antarctica—Casey Station, Antarctica—Davis Station.
This manual has been prepared to assist personnel installing Halon gas fire protection systems (H.F.P.S.) in store buildings at Australian Antarctic bases. The manual explains the purpose of various materials and techniques, describes installation procedures, and briefly explains the operation of the Halon system. Thus, the intentions of the designers and the importance of particular design features should be understood when on-site decisions are being made. The manual does not detail installation procedures exhaustively. It supplements working drawings by, first, outlining the overall installation sequence, second, isolating particular areas where correct procedures and proper completion of work are vital to the successful performance of the Halon system and, third, highlighting practices peculiar to Antarctic bases. (Auth.)

39-2232
Mawson bulk fuel system. AANBUS erection manual for prefabricated antarctic buildings and reticulated services.
Australia. Department of Transport and Construction, Canberra, 1982, var. p.
Fuels, Tanks (containers), Pumps, Buildings, Antarctica—Mawson Station.
The manual covers the transfer of fuel tanks from ship to shore, and the installation of fuel tanks, reticulation pipework, walkways, the pumping station and electrical installation. It concentrates on handling tanks between ship and final location ashore. It includes detailed descriptions of the recommended procedure for 'splitting' the tank pairs and reassembling as completed storage units. In other areas such as pipework, electrical and pumping station installation, the manual must be read in conjunction with specifications and drawings. (Auth.)

39-2233
AANBUS data sheets for erection of prefabricated antarctic buildings and services.
Australia. Department of Housing and Construction, Canberra, 1984, var. p.
Cold weather construction, Buildings, Prefabrication.
These data sheets provide detailed description of various tasks associated with building construction in Antarctica. They should be read in conjunction with the Erection Manual and Drawings for the specific building or construction being erected. To facilitate quality control during construction, certain tests are required to be done on site. Data sheets address the following specific topics. cold and wind—the basic design considerations, soil compaction, ground anchors, concrete (2 data sheets), grout epoxy and scaffold tubes, cladding, internal linings, mechanical services, insulation, heat shrinking, pipework, electrical services, and cable joining. (Auth. mod.)

39-2234
Fiber optic aerial cables.
Oestreich, U.H.P., *Fiber and integrated optics*, 1982, (1), p.95-106.
Icing, Power lines, Ice loads, Dynamic loads, Strains, Wind factors, Stresses, Temperature effects.

39-2235
Waves on glaciers.
Fowler, A.C., *Journal of fluid mechanics*, July 1982, Vol.120, p.283-321.
Glacier flow, Wave propagation, Glacier surfaces, Basal sliding, Glacier surges, Surface properties, Fluid dynamics, Mathematical models, Seasonal variations.

39-2236
Generation of the snowline.
Bagchi, A.K., *Photogrammetric engineering and remote sensing*, Dec. 1983, 49(12), p.1679-1689, 18 refs.
Snow line, Remote sensing, Mountains, Snow depth, LANDSAT, Models, Seasonal variations.

39-2237
Flashover tests of artificially iced insulators.
Charneski, M.D., et al, *IEEE transactions on power apparatus and systems*, Aug. 1982, PAS-101(8), p.2429-2433, 4 refs.
Gaibrois, G.L., Whitney, B.F.
Power line icing, Freezing, Rain, Warning systems, Electric equipment, Tests, Electric discharges.

39-2238
Present state-of-the-art of transmission line icing.
Pohlman, J.C., et al, *IEEE transactions on power apparatus and systems*, Aug. 1982, PAS-101(8), p.2443-2450, For another source see 36-469. 34 refs.
Landers, P.
Power line icing, Ice loads, Ice prevention, Snow accumulation, Transmission lines, Wind factors, Mathematical models.

39-2239
Pile foundations of buildings and structures on sagging ground. [Svaĭnye fundamenty zdaniĭ i sooruzheniĭ na prosadochnykh gruntakh].
Grigorian, A.A., Moscow, Strofizdat, 1984, 162p., In Russian with abridged English table of contents enclosed. 72 refs.
Soil water migration, Residential buildings, Foundations, Industrial buildings, Piles, Municipal engineering, Clay soils, Loess, Bearing strength, Settlement (structural), Thixotropy.

39-2240
Ivan Papanin—hero of the Arctic. Documented essay. [Geroĭ Arktiki Ivan Papanin. Dokumental'nyĭ ocherk].
Tikhomirov, G.S., Moscow, Mysl', 1984, 188p., In Russian with abridged English table of contents enclosed. Refs. p.150-186.
Expeditions, Ice navigation, Drift stations, Military operation, Northern Sea Route, Polar regions, Military transportation, Military facilities, Arctic Ocean.

39-2241
Town beyond the polar circle and its environment. [Gorod v Zapoliar'e i okruzhaiushchaia sreda].
Gorbacheva, V.M., Leningrad, Strofizdat, 1984, 99p., In Russian with English table of contents enclosed. 56 refs.
Urban planning, Municipal engineering, Continuous permafrost, Permafrost hydrology, Polar regions, Climatic factors, Meteorological charts, Meteorological data, Site surveys.

39-2242
Casey old station site plan, Issue No.2.
Banhidy, J., Canberra, Aug 1984, 1 sheet.
Charts, Stations, Cold weather construction, Antarctica—Casey Station.

The drawing of the station layout at a scale of about 2.5cm/50m shows locations of buildings and identifies them by function. Routes of reticulated services both above and below ground are also shown as are E-W and N-S construction lines and benchmarks. Prevailing wind is easterly at Casey; most structures are oriented parallel with it.

39-2243
Casey site plan, Issue No.4.
Banhidy, J., Canberra, Aug. 1984, 1 sheet.
Charts, Stations, Cold weather construction, Antarctica—Casey Station.
The drawing of the station layout at a scale of about 2.5cm/50 m shows locations of buildings and identifies them by function. Routes of reticulated services both above and below ground are also shown as are E-W and N-S construction lines and bench marks. Prevailing wind is easterly at casey; most structures are oriented parallel to it.

39-2244
Mawson site plan, Issue No.3.
Banhidy, J., Canberra, Aug. 1984, 1 sheet.
Charts, Stations, Cold weather construction, Antarctica—Mawson Station.
The drawing of the station layout at a scale of about 2.5cm/50m shows locations of buildings and identifies them by function. Routes of reticulated services both above and below ground are also shown as are E-W and N-S construction lines and benchmarks. Prevailing wind is southeasterly at Mawson; most structures are oriented parallel with it.

39-2245
Davis site plan, Issue No.4.
Banhidy, J., et al, Canberra, Aug. 1984, 1 sheet.
Kutle, T.
Charts, Stations, Cold weather construction, Antarctica—Davis Station.
The drawing of the station layout at a scale of about 2.5cm/50m shows locations of buildings and identifies them by function. Routes of reticulated services both above and below ground are also shown as are E-W and N-S construction lines and benchmarks. Prevailing wind at Davis is northeasterly; most structures are oriented parallel with it.

39-2246
Waste disposal at Australian antarctic stations.
Holmes, I.E.B., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.308-315.
Cross, R.
Waste disposal, Sewage treatment, Sanitary engineering, Antarctica—Mawson Station, Antarctica—Casey Station, Antarctica—Davis Station.
The redevelopment of Australia antarctic stations provides an opportunity to upgrade waste disposal systems currently in use there. Some of the conceptual and technological improvements are explained and discussed. Attachment A gives a description of the filtration system and the functions of major components.

39-2247
Probability analysis and modeling of oceanic processes. [Veroiatnostnyĭ analiz i modelirovanie okeanologicheskikh protsessov],
Rozhkov, V.A., ed, Leningrad, Gidrometeoizdat, 1984, 164p., In Russian. For selected paper see 39-2248. 5 refs
Mathematical models, Statistical analysis, Sea ice distribution, Ice conditions.

39-2248
Probability model of ice conditions on Arctic seas. [Veroiatnostnaia model' ledovitosti arkticheskikh morei],
Trapeznikov, IU.A., et al, Veroiatnostnyĭ analiz i modelirovanie okeanologicheskikh protsessov (Probability analysis and modeling of oceanic processes) edited by V.A. Rozhkov, Leningrad, Gidrometeoizdat, 1984, p.39-42, In Russian. 5 refs.
Chepurina, M.A.
Ice conditions, Sea ice distribution, Mathematical models, Statistical analysis, Arctic Ocean.

39-2249
Hydrometeorological studies. [Gidrometeorologicheskie issledovaniia],
Chistiaeva, S.P., ed, *Alma-Ata. Kazakhskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1984, Vol.87, 152, In Russian. For selected papers see 39-2250 through 39-2255. Refs. passim.
Tiurebaeva, S.I., ed.
Snow surveys, Precipitation (meteorology), Slope processes, Power line icing, Hoarfrost, Avalanche formation, Glacial hydrology, Mudflows, Ice loads, Countermeasures, Alpine landscapes.

39-2250
Probable dates of the first (fall) and the last (spring) cases of ice-hoarfrost phenomena. [Veroiatnostnye kharakteristiki srokov pervogo osen'iu i poslednego vesnoĭ sluchaev gololedno-izmorozevykh iavleniĭ],
Guliaev, IU.N., *Alma-Ata. Kazakhskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1984, Vol.87, p.33-38, In Russian. 5 refs.
Transmission lines, Power line icing, Glaze, Hoarfrost, Ice accretion, Ice loads, Topographic effects, Meteorological data.

39-2251
Corrections of atmospheric precipitation measurements obtained on the northern slope of Dzhungarskiy Alatau. [Korrektirovka atmosfernykh osadkov na severnom sklone Dzhungarskogo Alatau],
Gal'ster, N.V., *Alma-Ata. Kazakhskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1984, Vol.87, p.38-43, In Russian. 13 refs.
Snow accumulation, Snow water equivalent, Snow surveys, Alpine landscapes, Measuring instruments, Accuracy.

39-2252
Applying phytoindication techniques to characterization of avalanche activities in the Kazakh Altai. [Opyt primeneniia fitoindikatsionnykh metodov dlia kharakteristiki lavinnoĭ deiatel'nosti Kazakhstanskogo Altaia],
Borcheninova, T.M., *Alma-Ata. Kazakhskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1984, Vol.87, p.57-64, In Russian. 8 refs.
Slope processes, Avalanche deposits, Avalanche formation, Avalanche erosion, Alpine landscapes, Vegetation factors.

39-2253
Hydraulic study of the catastrophic spillway of a mudflow-intercepting structure in the Myznhilki area. [Gidravlicheskie issledovaniia katastroficheskogo vodosbrosa seleulovitelia v ur. Mynzhilki],
Zhakishev, M.A., *Alma-Ata. Kazakhskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1984, Vol.87, p.96-103, In Russian. 3 refs.
Glacial lakes, Mudflows, Earth dams, Spillways, Design.

39-2254
Determining the rate of settling of the solid component of mudflow masses. [K voprosu ob opredelenii skorosti osazhdeniia tverdoĭ sostavliaiushcheĭ selevoĭ massy],
Timorshin, N.M., *Alma-Ata. Kazakhskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1984, Vol.87, p.118-122, In Russian. 3 refs.
Mudflows, Suspended sediments, Sedimentation, Slope processes.

39-2255
Preliminary studies of the avalanche-danger regions on the Talasskiy and Ugamskiy ranges. [Predvaritel'nye issledovaniia lavinoopasnykh raĭonov Talasskogo i Ugamskogo khrebtov],
Borcheninova, T.M., et al, *Alma-Ata. Kazakhskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1984, Vol.87, p.122-128, In Russian. 5 refs.
Berman, O.A.
Slope processes, Snow cover distribution, Snow cover stability, Avalanche formation, Climatic factors, Alpine landscapes, Topographic effects.

39-2256
Fracture toughness evaluation of steels for Arctic marine use.
Study Session on Fracture Toughness Evaluation of Steels for Arctic Marine Use, Ottawa, Oct. 1983, Physical Metallurgy Research Laboratories, MRP/PMRL 83-72 (OP-J), Ottawa, Centre for Mineral and Energy Technology, 1984, var.p., Refs. passim.
Thomson, R., ed, Champion, C.S., ed.
Steel structures, Ice navigation, Ships, Fracturing, Brittleness, Loads (forces), Icebreakers, Fatigue (materials), Ice conditions, Ice breaking, Meetings.

39-2257
Radar and infrared remote sensing of terrain, water resources, Arctic sea ice, and agriculture.
Biggs, A.W., Propagation factors affecting remote sensing by radio waves, AGARD conference proceedings, No.345, Advisory Group for Aerospace Research and Development, Aug. 1983, p.6/1-6/22, ADA-137 559, 11 refs.
Sea ice distribution, Remote sensing, Snow cover distribution, Radar echoes, Infrared reconnaissance, Ice cover thickness, Airborne radar, Backscattering, Ice detection.

39-2258
Proceedings.
Workshop on the Properties of Snow, Snowbird, Utah, Apr. 8-10, 1981, *U.S. Army Cold Regions Research and Engineering Laboratory*, [1981], SR 82-18, 135p., ADA-120 517, Refs. passim. For individual papers see 36-2530 through 36-2535, 39-2259 and 39-2260.
Brown, R.L., ed, Colbeck, S.C., ed, Yong, R.N., ed.
Snow physics, Snow mechanics, Snow acoustics, Snow optics, Snow electrical properties, Meetings, Remote sensing.

39-2259
Electrical properties of snow.
Stiles, W.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, 1981, SR 82-18, Workshop on the Properties of Snow, Snowbird, Utah, Apr. 8-10, 1981. Edited by R.L. Brown, S.C. Colbeck and R.N. Yong, p.91-103, ADA-120 517, 37 refs.
Ulaby, F.T.
Snow electrical properties, Ice electrical properties, Snow water content, Microwaves, Remote sensing, Unfrozen water content, Dielectric properties, Electromagnetic properties, Analysis (mathematics).

39-2260
Electrical, optical and acoustical properties of snow.
Gubler, H., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, 1981, SR 82-18, Workshop on the Properties of Snow, Snowbird, Utah, Apr. 8-10, 1981. Edited by R.L. Brown, S.C. Colbeck and R.N. Yong, p.111-124, ADA-120 517, Refs. p.122-124.
Snow electrical properties, Snow optics, Snow acoustics, Albedo, Freeze thaw cycles, Snow water content, Microwaves, Snow surface, Grain size, Snow impurities.

39-2261
Sea ice movements from synthetic aperture radar.
Rothrock, D.A., et al, Seattle, University of Washington, Polar Science Center, Dec. 1981, 84p. ADA-109 002.
Thorndike, A.S.
Sea ice distribution, Drift, Ice mechanics, Remote sensing, Radar, Velocity, Ice detection, Stresses, Buoyancy.

39-2262
Northern ecology and resource management.
Olson, R., ed, Edmonton, University of Alberta Press, 1984, 438p., Refs. passim. For selected papers see 39-2263 through 39-2270.
Hastings, R., ed, Geddes, F., ed.
Ecology, Permafrost, Tundra, Vegetation, Polar regions, Soil formation, Natural resources, Wind erosion, Taiga, Environmental impact, Canada—Northwest Territories.

39-2263
Some considerations of soil development in northwestern Canada and some ecological relationships.
Pettapiece, W.W., Northern ecology and resource management. Edited by R. Olson, R. Hastings and F. Geddes, Edmonton, University of Alberta Press, 1984, p.3-17, Refs. p.15-17.
Soil formation, Permafrost, Geocryology, Ecology, Vegetation, Climatic factors, Plant ecology, Landscape types, Canada—Northwest Territories—Mackenzie River.

39-2264
Characteristics of soil temperature regimes in the Inuvik area.
Tarnocai, C., Northern ecology and resource management. Edited by R. Olson, R. Hastings and F. Geddes, Edmonton, University of Alberta Press, 1984, p.19-37, 12 refs.
Soil temperature, Permafrost thermal properties, Active layer, Thermal regime, Patterned ground, Snow cover effect, Climatic factors, Vegetation factors, Canada—Northwest Territories—Mackenzie River Delta.

39-2265
Deflation measurements of Hietatievat, Finnish Lapland, 1974-77.
Seppälä, M., Northern ecology and resource management. Edited by R. Olson, R. Hastings and F. Geddes, Edmonton, University of Alberta Press, 1984, p.39-49, 20 refs.
Wind erosion, Periglacial processes, Vegetation, Frost mounds, Swamps, Climatic factors, Sands, Topographic features, Finland—Lapland.

39-2266
Snow and living things.
Pruitt, W.O., Jr., Northern ecology and resource management. Edited by R. Olson, R. Hastings and F. Geddes, Edmonton, University of Alberta Press, 1984, p.51-77, Refs. p.73-77.
Tundra, Steppes, Snow cover effect, Animals, Freeze thaw cycles, Wind factors, Taiga, Climatic factors, Ecosystems.

39-2267
Lichen woodland in northern Canada.
Rowe, J.S., Northern ecology and resource management. Edited by R. Olson, R. Hastings and F. Geddes, Edmonton, University of Alberta Press, 1984, p.225-237, Refs. p.235-237.
Lichens, Taiga, Distribution, Vegetation, Canada—Northwest Territories.

39-2268
Tundra plant communities of the Mackenzie Mountains, Northwest Territories; floristic characteristics of long-term surface disturbances.
Kershaw, G.P., Northern ecology and resource management. Edited by R. Olson, R. Hastings and F. Geddes, Edmonton, University of Alberta Press, 1984, *p.239-309, Refs. p.306-309.*
Tundra, Plant ecology, Vegetation, Classifications, Pipelines, Environmental impact, Human factors, Lichens, Damage, Canada—Northwest Territories.

39-2269
Implications of upstream impoundment on the natural ecology and environment of the Slave River Delta, Northwest Territories.
English, M.C., Northern ecology and resource management. Edited by R. Olson, R. Hastings and F. Geddes, Edmonton, University of Alberta Press, 1984, p.311-339, Refs. p.336-339.
Discontinuous permafrost, Ecology, Vegetation, Deltas, Seasonal variations, Canada—Northwest Territories—Slave River Delta.

39-2270
Some terrain and land-use problems associated with exploratory wellsites, Northern Yukon Territory.
French, H.M., Northern ecology and resource management. Edited by R. Olson, R. Hastings and F. Geddes, Edmonton, University of Alberta Press, 1984, p.365-385, *34 refs.*
Tundra, Permafrost preservation, Environmental impact, Vegetation, Wells, Landforms, Exploration, Drilling, Damage, Canada—Yukon Territory.

39-2271
Asymmetries of the melting transition.
Bilgram, J.H., *New York Academy of Sciences. Annals,* 1984, Vol.404, International Conference on Physicochemical Hydrodynamics, 4th, New York, June 13-17, 1982. Proceedings. Edited by R. Pfeffer, p.335-346, 20 refs.
Melting, Freeze thaw cycles, Freezing, Ice nuclei, Crystal growth, Heat transfer, Latent heat, Liquid solid interfaces, Thermal diffusion, Supercooling, Dendritic ice.

39-2272
Soil movements on permafrost slopes near Fairbanks, Alaska.
Wu, T.H., *Canadian geotechnical journal,* Nov. 1984, 21(4), p.699-709, With French summary. 14 *refs.*
Permafrost physics, Soil mechanics, Slope stability, Soil strength, Ground thawing, Hummocks, Pressure, Slope orientation, Shear strength, Mosses, Roots, United States—Alaska—Fairbanks.

39-2273
Geomorphological research in the past Japanese Antarctic Research Expeditions.
Yoshida, Y., *Polar news,* Feb. 1984, No.38, p.2-8, In Japanese.
Geomorphology, Expeditions, Ice sheets, Research projects, Antarctica—Prince Olav Coast, Antarctica—Prince Harald Coast.
Five major conclusions are reached from analysis of JARE Data obtained by field surveys since *1957: 1) The ice sheet probably* extended to the outer margin of the continental shelf, and all presently *ice-free areas were* buried by ice at an unknown time; 2) Lützow-Holm Bay seems to occupy a tectonically depressed area; 3) the last major shrinkage from the ice-free areas took place earlier than 30,000 years ago; 4) after the shrinkage of the ice sheet, parts of ice-free areas were submerged by the sea, and then have uplifted at least 20 meters since that time; and 5) the ice-smoothed surfaces with striations and grooves and some characteristic *till suggest that the glacial erosion by wet-based* glaciers took place not only in the coastal area but also in inland mountains.

39-2274
Environmental pollution of chlorinated hydrocarbons in the Antarctic.
Hidaka, H., *Polar news,* Feb. 1984, No.38, p.9-14, In Japanese.
Environments, Pollution, Hydrocarbons, Chemical properties, Antarctica—Showa Station.
DDT and PCB levels in air, snow, seawater, marine invertebrates, *fish, Weddell seals etc. collected* by the 22nd JARE (1980-1982) around Showa Station were determined and the bioaccumulation and environmental dynamics of these chemicals in the Antarctic are discussed. Concentration levels of DDT and PCBs in the antarctic marine ecosystem are much *lower than those in the other oceans. The low concentration* of these chemicals in seawater under antarctic fast ice may be caused by characteristics of the antarctic environment, such as isolation from the outer world, ice covering, and high bioproductivity in austral summer among others. Additionally, specific characteristics of environmental pollution by chlorinated hydrocarbons in the Antarctic are discussed.

39-2275
Indian and Brazilian activities in the Antarctic.
Kusunoki, K., *Polar news,* Feb. 1984, No.38, p.49-51, *In Japanese.*
Low temperature research, Weather stations, Ice shelves, Marine biology, Site surveys.
In September 1983 India and Brazil reached Consultative Party *status of the Antarctic Treaty.* The first Indian antarctic expedition aboard *Polarsirkel* in the 1980/81 season landed on the ice shelf near the former Russian station Lazarevskaya and set up an automatic weather station (*Dakshin Gangotri*) near the Russian Station Novolazarevskaya. Activities continued in *the 1981/82 season,* with the selection of research station and runway sites on the ice shelf at about 70S/12E. Brazilian activities in the 1982/83 summer on board the *Professor W. Besnard* and a Navy ship *Barão de Teffé* were in the vicinity of the Antarctic Peninsula and in the Weddell Sea for marine biological work and ice navigation experience. *Brazilian observers* visited other nations' ship and land stations. Brazil plans to participate *in the* BIOMASS/SIBEX program in 1983/84 season and to establish a summer station in the Antarctic Peninsula area in the same season.

39-2276
Marginal ice zone experiment. *U.S. Office of Naval Research. Naval research reviews,* 1984, 36(4), p.22-27, 12 refs.
Sea ice, Ice edge, Research projects, Oceanography, Greenland Sea.

39-2277
West antarctic ice sheet: diagnosis and prognosis.
Bentley, C.R., Carbon dioxide, science and consensus: Carbon Dioxide Research Conference, *1982,* Proceedings, 1983, p.IV.3-IV.50, 32 refs.
Ice sheets, Ice shelves, Ice cover thickness, Ablation, Sea level, Antarctica—Ross Ice Shelf, Antarctica—West Antarctica.
Some authors have attributed the global rise in sea level over the last century, and a disputed acceleration of that rise in the last 40 years, to mass loss from the West Antarctic ice sheet. Field evidence from Antarctica, however, does not support that conclusion. Instead, the data strongly suggest that the ice sheet, if it is changing at all, is growing rather than shrinking. Evidence for this is particularly good in the Ross Sea and Pine Island Glacier drainage systems. (Auth.)

39-2278
Dwellings and climate. [Zhilishche i klimat],
Litskevich, V.K., Moscow, Strojizdat, 1984, 288p., In Russian with English table of contents enclosed. 202 refs.
***Residential buildings,* Houses, Large panel buildings, Thermo' insulation, Windows, Wind factors, Arctic regions, Walls, Clothing, Subarctic regions, Heating, Alpine landscapes.**

39-2279
Antarctic circumpolar ocean.
Deacon, G., Cambridge, University Press, 1984, 180p. DLC GC461.D4
Sea ice, Icebergs, Antarctica.
The first part of this book deals with the pioneering observations of the early explorers of Antarctica and its surrounding waters, and of the sealers and whalers who profited from the new discoveries, the observations made by polar explorers, and the systematic studies of oceanographic expeditions. The second part summarizes present knowledge of the water movements and their effects on temperature and salinity distribution, biological productivity, distribution of marine plants and animals, climate and ice cover. *It is shown how present knowledge has* grown from earlier findings, and how it relates to economic *problems, such as the conservation of marine living resources.*

39-2280
Calculating mudflow characteristics. [K probleme rascheta kharakteristik selei],
Stepanov, B.S., *Selevye potoki,* 1984, No.8, p.3-17, In Russian. 8 refs.
Slope processes, Mudflows, Glacial lakes, Moraines, Floods, Flow rate, Impact strength, Density (mass/volume), Suspended sediments, Models, Analysis (mathematics).

39-2281
Development of mudflow processes in foci of different types. [O nekotorykh osobennostiakh razvitiia selevykh protsessov v ochagakh raznykh tipov],
Khonin, R.V., *Selevye potoki,* 1984, No.8, p.17-29, In Russian. 16 refs.
Alpine landscapes, Slope processes, Glacial hydrology, Glacial lakes, Dams, Moraines, Mudflows, Floods, Landscape types, Measuring instruments.

39-2282
Three-layer model of movement of a cohesive (highly concentrated) mudflow. [Trekhsloinaia model' dvizheniia sviaznogo (vysokokontsentrirovannogo) selevogo potoka],
Tevzadze, V.I., et al, *Selevye potoki,* 1984, No.8, p.29-32, In Russian. 11 refs.
Kukhalashvili, E.G.
Models, Mudflows, Suspended sediments, Cohesion, Flow rate, Analysis (mathematics), Viscosity.

39-2283
Calculating the speed of movement of mudflows. [K raschetu skorosti dvizheniia selevykh potokov],
Stepanov, B.S., et al, *Selevye potoki,* 1984, No.8, p.32-39, In Russian. 14 refs.
Stepanova, T.S.
Mudflows, Laminar flow, Turbulent flow, Viscous flow, Plastic flow, Analysis (mathematics), Flow rate.

39-2284
Estimation of the length of evacuation cones of mudflows. [Otsenka dal'nosti prodvizheniia selevykh potokov na konuse vynosa],
Stepanov, B.S., et al, *Selevye potoki,* 1984, No.8, p.39-42, In Russian.
Tsukerman, I.G.
Fines, Solifluction, Clays, Mudflows, Flow rate, Composition, Slope processes, Suspended sediments, Rocks, Rheology.

39-2285
Plasticity of mudflow mixtures and limits of its existence. [O prirode plastichnosti selevoi smesi i predelakh ee sushchestvovaniia],
Gavrishina, L.N., *Selevye potoki,* 1984, No.8, p.42-52, In Russian. 11 refs.
Mudflows, Rheology, Fines, Rocks, Shear strength, Plastic properties, Surface roughness, Friction, Flow rate.

39-2286
Forecasting mudflows along the BAM line. [Prognozirovanie selei na trasse BAM],
Keremkulov, V.A., et al, *Selevye potoki,* 1984, No.8, p.52-59, In Russian. 7 refs.
Kirenskaia, T.L.
Mudflows, Soil erosion, Baykal Amur railroad, Forecasting, Stream flow, Slope processes, Seasonal freeze thaw, Permafrost.

39-2287
Interrelations between runoff and processes originating inside moraines. [O vzaimosviazi stoka i vnutrimorennykh protsessov],
Golubovich, V.A., *Selevye potoki,* 1984, No.8, p.74-77, In Russian. 3 refs.
Moraines, Mudflows, Glacier ice, Meltwater, Mountain glaciers, Glacial hydrology, Seepage, Ablation, Soil water migration.

39-2288
Origin and structure of glacial lakes in Kirghizia and the mechanism of bursting. [Proiskhozhdenie i stroenie gliatsial'nykh ozer Kirgizii i mekhanizm ikh proryva],
Stavisskiĭ, I.A.S., et al, *Selevye potoki,* 1984, No.8, p.77-83, In Russian. 4 refs.
Shatravin, V.I.
Mudflows, Glacial lakes, Dams, Moraines, Ground ice, Ice melting.

39-2289
Methods of revealing mudflow-forming factors during detailed studies of high mountain lakes. [Metodicheskie osnovy vyiavleniia seleformiruiushchikh faktorov pri detal'nykh obsledovaniiakh vysokogornykh ozer],
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Stavisskiĭ, I.A.S.
Mudflows, Glacial lakes, Moraines, Surveys, Glacier ice, Alpine landscapes, Ground ice.

39-2290
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Mudflows, Glacial lakes, Moraines, Dams, Models, Flooding.

39-2291
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Stepanov, B.S.
Glacial lakes, Drainage, Mudflows, Countermeasures.

39-2292
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Mudflows, Soil aggregates, Fines, Rocks, Static loads, Static stability, Analysis (mathematics), Accuracy.

39-2293
Methods of determining the viscosity of mudflow mixtures. [K metodike opredeleniia viazkosti selevoĭ smesi],
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Stepanov, B.S.
Mudflows, Soil aggregates, Viscosity, Flow rate, Viscoelasticity, Rheology.

39-2294
Experimental assembly for studying the interaction of mudflow mass with obstacles. [Eksperimental'naia ustanovka dlia izucheniia vzaimodeĭstviia selevoĭ massy s pregradoĭ],
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Baĭnatov, Zh.B.
Mudflows, Impact strength, Flow rate, Test equipment.

39-2295
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Mudflows, Glacier ice, Moraines, Glacier ablation, Mountain glaciers, Glacial hydrology.

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Mountain glaciers, Geomorphology, Glacier surveys, Meltwater, Alpine glaciation, Research projects, Meetings, Radio echo soundings, Remote sensing, Kashmir—Karakoram Mountains.

39-2297
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39-2298
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39-2299
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Glacier surveys, Mountain glaciers, Glacial hydrology, Glacier flow, Glacial meteorology, Topographic maps, Glacier ablation, Glacier thickness, China—Batura Glacier.

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Glacier surges, Mountain glaciers, Glacier flow, Glacier thickness, Velocity, Glacier tongues, Temperature effects, Stresses, Greenland—Roslin Glacier.

39-2301
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Glacier surges, Mountain glaciers, Glacier flow, Basal sliding, Glacier thickness, Ice temperature, Velocity, Crevasses, Kashmir—Balt Bare Glacier.

39-2302
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Xu, S.
Glacier surveys, Mountain glaciers, Atmospheric circulation, Distribution, Precipitation (meteorology), China—Qinghai-Xizang Plateau.

39-2303
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Goudie, A.S.
Mountain glaciers, Glacier oscillation, Glacier flow, Glacier surveys, Mapping, Stratigraphy, Climatic changes, Radioactive age determination.

39-2304
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Miller, K.J.
Glacier surveys, Mountain glaciers, Glacier thickness, Remote sensing, Sounding, Computer applications, LANDSAT, Mapping, Iceland—Vatnajökull.

39-2305
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Ferrari, R.L., Owen, G.
Glacier thickness, Mountain glaciers, Radar echoes, Sounding, Electronic equipment, Iceland—Vatnajökull.

39-2306
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Glacier thickness, Mountain glaciers, Glacier beds, Radar echoes, Glacier surveys, Sounding, Ice cover thickness, Profiles, Iceland—Vatnajökull.

39-2307
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Miller, K.J., International Karakoram Project. Edited by K.J. Miller. Vol.1, Cambridge University Press, 1984, p.135-146, 35 refs.
Ice cracks, Fracturing, Loads (forces), Engineering, Fatigue (materials), Stresses, Temperature effects, Elastic properties, Plastic properties.

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Glacier ice, Mountain glaciers, Ice cracks, Fracturing, Stresses, Crevasses, Ice elasticity, Tests.

39-2309
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Glacier flow, Mountain glaciers, Glacier surveys, Ice mechanics, Velocity.

39-2310
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39-2311
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39-2312
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39-2314
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Geomorphology, Mountain glaciers, Slope stability, Landslides, Glacier surges, Mountains, Mapping, Landscape types, Kashmir—Karakoram Mountains.

39-2315
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Jan, Q.
Geography, Mountain glaciers, Geology, Alpine glaciation, Distribution, Moraines, Altitude.

39-2316
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39-2317
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Glacier thickness, Mountain glaciers, Radio echo soundings, Radar echoes, Moraines, Meltwater, Kashmir—Karakoram Mountains.

39-2318
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Glacier thickness, Mountain glaciers, Radio echo soundings, Profiles, Radar echoes, Moraines, Kashmir—Karakoram Mountains.

39-2319
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39-2320
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Mountain glaciers, Glacier oscillation, Glacier flow, Glacier tongues, Geomorphology, Glacier surveys, Glacial deposits, Moraines, Pakistan—Hunza River.

39-2321
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39-2322
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Glacial deposits, Mountain glaciers, Landscape development, Quaternary deposits, Grain size, Sediments, Mapping, Pakistan—Hunza River.

39-2323
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Meltwater, Mountain glaciers, Suspended sediments, Sediment transport, Runoff, River flow, Glacial hydrology, Seasonal variations, Erosion, Pakistan—Hunza River.

39-2324
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Ice conditions, Ice reporting, Sea ice distribution, Meteorological data, Icebergs, Aerial surveys, Charts, Seasonal variations, International cooperation, Data transmission, Atlantic Ocean.

39-2325
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Ice sheets, Paleoclimatology, Ice melting, Air pollution, Temperature effects, Carbon dioxide.
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39-2326
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Bacteria, Soil microbiology, Geocryology, Antarctica—Taylor Valley.
A halotolerant *Planococcus* (strain A4a) was isolated from saline Antarctic Dry Valley soil. *Planococcus* strain A4a grew over wide ranges of temperature (0-40C) and NaCl concentrations (0-2.0 M). When the NaCl concentration of the growth medium was increased, the total intracellular free amino acid concentration increased; however, the intracellular potassium concentration did not increase. This result suggested that intracellular free amino acids functioned as compatible solutes for growth of this strain at elevated NaCl concentrations. The halotolerant and psychrotolerant nature of the strain would appear to provide it with the capacity for growth in the saline Antarctic Dry Valley soil environment from which it was isolated. (Auth.)

39-2327
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Ice wedges, Permafrost, Ground ice, Active layer, Ice volume, Climatic changes, Canada—Yukon Territory—King Point.

39-2328
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Glacial lakes, Water flow, Mapping, Moraines, Beaches, Canada—Yukon Territory—McConnell Lake.

39-2329
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Hummocks, Patterned ground, Quaternary deposits, Polygonal topography, Moraines, Pleistocene, Canada—Saskatchewan.

39-2330
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Soil formation, Land development, Quaternary deposits, Geocryology, Periglacial processes, Moraines, Canada—Yukon Territory.

39-2331
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Glacial deposits, Landforms, Suspended sediments, Sediment transport, Glacial hydrology, Meltwater, Stratigraphy, Canada—Northwest Territories—Victoria Land.

39-2332
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Lawton, D.C.
Subsea permafrost, Permafrost distribution, Seismic reflection, Stratigraphy, Anisotropy, X ray diffraction, Beaufort Sea.

39-2333
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Glacial lakes, Moraines, Dams, Glacier oscillation, Sedimentation, Suspended sediments, Canada—Northwest Territories—Stewart Lakes.

39-2334
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Ice scoring, Paleoclimatology, Drill core analysis, Ocean bottom, Sedimentation, Lithology, Canada—British Columbia—Queen Charlotte Sound.

39-2335
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39-2336
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39-2337
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39-2338
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Accidents, Dust control, Permafrost, Mine shafts.

39-2339
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39-2340
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39-2341
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Taiga, River diversion, Permafrost hydrology, Meetings, Cryogenic soils, Land reclamation, Economic development, Human factors, Permafrost distribution

39-2342
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River basins, Permafrost beneath rivers, River flow, Discharge, Seasonal variations, Human factors.

39-2343
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39-2344
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Pisarskiĭ, B.I.
Taiga, Thermokarst, Permafrost hydrology, Water supply, Water reserves, Permafrost distribution, Water intakes, Environmental protection.

39-2345
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39-2346
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39-2347
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Taiga, Paludification, Land reclamation, River diversion, Water reserves.

39-2348
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Taiga, Permafrost hydrology, Runoff, Paludification, Land reclamation, River basins, Permafrost distribution, Drainage.

39-2349
Comparative evaluation of evaporation from forest lands and paluded areas of western Siberia. [Sravnitel'naia otsenka isparenila lesopokrytykh i zabolochennykh territoriĭ Zapadnoĭ Sibiri],
Rauner, IU.L., et al, Vodnye resursy taĭgi (Water resources of taiga) edited by G.V. Bachurin and IU.P. Mikhaĭlov, Irkutsk, 1984, p.120-127, In Russian. 9 refs.
Anan'ev, I.P., Abdullaev, A.A.
Taiga, Land reclamation, Paludification, River diversion, Evaporation.

39-2350
Structure of runoff in the forest zone of the European USSR. [Struktura stoka v lesnoĭ zone evropeiskoĭ chasti SSSR],
Koronkevich, N.I., Vodnye resursy taĭgi (Water resources of taiga) edited by G.V. Bachurin and IU.P. Mikhaĭlov, Irkutsk, 1984, p.128-132, In Russian. 12 refs.
Forest land, Steppes, Runoff, Soil water migration, Frost penetration, River flow, Discharge.

39-2351
Formation of hydroeconomic balances in taiga zones. [Formirovanie vodokhoziaĭstvennykh balansov taezhnykh territoriĭ],
Prashchikin, A.V., Vodnye resursy taĭgi (Water resources of taiga) edited by G.V. Bachurin and IU.P. Mikhaĭlov, Irkutsk, 1984, p.146-150, In Russian.
Taiga, Permafrost hydrology, Water reserves, Water balance, Permafrost distribution.

39-2352
Role of mountain forest in the southern part of central Siberia in the preservation of water resources. [Rol' gornykh lesov iuga Srednei Sibiri v okhrane vodnykh resursov],
Lebedev, A.V., Vodnye resursy taĭgi (Water resources of taiga) edited by G.V. Bachurin and IU.P. Mikhaĭlov, Irkutsk, 1984, p.156-164, In Russian. 9 refs.
Mountains, Alpine tundra, Permafrost hydrology, Forest soils, Soil water migration, Water supply, Economic development, Permafrost distribution, Alpine landscapes.

39-2353
Role of the water resources of Siberia in the water supply of the USSR. [K otsenke roli vodnykh resursov Sibiri v sisteme vodnogo khoziaĭstva strany],
Druzhinin, I.P., et al, Vodnye resursy taĭgi (Water resources of taiga) edited by G.V. Bachurin and IU.P. Mikhaĭlov, Irkutsk, 1984, p.165-176, In Russian.
Demin, V.G.
Water supply, Water treatment, Taiga, Water pollution, River basins, Drainage, Ground water, Water reserves.

39-2354
Special colour enhancement for three channels having similar radiances.
Thomas, I.L., et al, *International journal of remote sensing*, Sept.-Oct. 1984, 5(5), p.753-760, 8 refs.
Nicholas, J.V.
Ice optics, LANDSAT, Remote sensing, Topographic maps, Pack ice.
A special enhancement algorithm is derived to color separate ground-cover classes whose recorded wavelength distributions are similar but have significantly differing intensities. The special enhancement function is derived from considering the spectrum locus of a CIE 1931 (x,y) chromaticity diagram. By analogy with the relationship between the chromaticity co-ordinates and the channel radiance levels a function is derived that stretches the radiances to maximize the color differences between such ground-cover classes. This Sinusoidal Squeeze algorithm is applied to enhance the color differentiation of Antarctic ice types as recorded by LANDSAT. A comparison is made between this special enhancement and the conventional color composite results for antarctic ice pack. (Auth. mod.)

39-2355
Measurements of hydrogen peroxide in polar ice samples.
Neftel, A., et al, *Nature*, Sep. 6, 1984, 311(5981), p.43-45, 19 refs.
Jacob, P., Klockow, D.
Ice cores, Ice chemistry, Greenland, Antarctica—South Pole.
Hydrogen peroxide, a powerful oxidant, is believed to be a key component in the oxidation of SO2 and H2SO4 in clouds. The first quantitative H2O2 measurements in snow, rain, hoarfrost and fog were reported in 1874, however, systematic investigations of H2O2 concentrations in precipitation and hydrometeors began only a few years ago. We report here measurements of hydrogen peroxide in polar ice samples. To our knowledge, chemically-reactive species have not been previously analysed in ice core samples. Our measurements show that H2O2 is a dominant trace compound present in clouds over remote and clean areas. (Auth.)

39-2356
Anthelic arcs from airborne ice crystals.
Greenler, R.G., et al, *Nature*, Sep. 27, 1984, (5984), p.339-343, 21 refs.
Tränkle, E.
Ice crystal structure, Ice crystal optics, Computerized simulation, Optical phenomena.

39-2357
Coupled ice-ocean model of ice breakup and banding in the marginal ice zone.
Smedstad, O.M., et al, *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.876-882, 12 refs.
Röed, L.P.
Ice edge, Ice water interface, Ice models, Ice breakup.
A coupled ice-ocean numerical model for the marginal ice zone is considered. The model consists of a nonlinear sea ice model and a two-layer (reduced gravity) ocean model. The dependence of the upwelling response on wind stress direction is discussed. The results confirm earlier analytical work. It is shown that there exist directions for which there is no upwelling, while other directions give maximum upwelling in terms of the volume of uplifted water. The ice and ocean is coupled directly through the stress at the ice-ocean interface. An interesting consequence of the coupling is found in cases when the ice edge is almost stationary. In these cases the ice tends to break up a few tenths of kilometers inside of the ice edge. (Auth.)

39-2358
Model of sea-ice front instabilities.
Killworth, P.D., et al, *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.883-888, 11 refs.
Paldor, N.
Sea ice, Ice edge, Ice models.

39-2359
Sea ice motion as a drunkard's walk.
Colony, R., et al, *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.965-974, 2 refs.
Thorndike, A.S.
Sea ice, Drift, Arctic Ocean.

39-2360
SAR imaging of waves in water and ice: evidence for velocity bunching.
Lyzenga, D.R., et al, *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.1031-1036, 14 refs.
Shuchman, R.A., Lyden, J.D., Rufenach, C.L.
Radar echoes, Sea ice, Ice edge, Ocean waves.

39-2361
Ice thickness distribution in Davis Strait in February from submarine sonar profiles.
Wadhams, P., et al, *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.1069-1077, 14 refs.
McLaren, A.S., Weintraub, R.
Sea ice, Ice cover thickness, Acoustic measurement, Davis Strait.

39-2362
Ice-induced vertical circulation in an Arctic fiord.
Horne, E.P.W., *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.1078-1086, 24 refs.
Glacier ice, Ice cover effect, Ocean currents, Fjords.

39-2363
Algorithm to measure sea ice concentration with microwave radiometers.
Swift, C.T., et al, *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.1087-1099, 14 refs.
Fedor, L.S., Ramseier, R.O.
Sea ice distribution, Microwaves, Radiometry, Beaufort Sea.

39-2364
Numerical model of interactions between a marine ice sheet and the solid earth: application to a west antarctic ice stream.
Lingle, C.S., et al, *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.1100-1114, 48 refs.
Clark, J.A.
Ice sheets, Ice solid interface, Sea level, Ice shelves, Grounded ice, Mathematical models, Antarctica—Ross Ice Shelf.
A time-dependent numerical model has been constructed that simulates retreat of a West Antarctic ice stream from the edge of the continental shelf during the Holocene period of rising sea level. This paper describes a method for computing the deformation of the solid earth caused by changes in ice and water loading during retreat of the ice stream. The relative sea level changes caused by earth deformation are incorporated as a feedback mechanism in the ice stream model. Elastic and viscous uplift of the earth, caused by thinning of the ice stream and its catchment area, delayed retreat of the grounding line relative to computed retreat when the ice stream was assumed to be resting on a rigid earth. Computed retreat of the grounding line began very slowly because of rising eustatic sea level. Within the context of a given ice shelf retreat history the feedback effects of earth deformation caused a reduction of the grounding-line retreat rate, a reduction of the total computed retreat distance, and a readvance of the grounding line after eustatic sea level stopped rising. (Auth. mod.)

39-2365
Soluble impurities in the Byrd Station ice core, Antarctica: their origin and sources.
Palais, J.M., et al, *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.1143-1154, 30 refs.
Legrand, M.
Ice cores, Impurities, Chemical analysis, Antarctica—Byrd Station.
Results are presented of analyses of the major soluble impurities made on bulk samples selected at approximately 50 m intervals down the length of an ice core from Byrd Station. Most samples are in ionic balance, and it is therefore possible to suggest with which compounds the ionic impurities are linked. These compounds include an important contribution from both sea salts and strong acids. The Cl/Na mole ratio is quite stable throughout the core and hovers about the expected bulk sea water ratio. In general, the marine-derived components at Byrd Station decreased by a factor of 2 between the Late Glacial Maximum and Holocene while the gas-derived acid components decreased by a factor of only 1.5. Some possible causes of these variations are suggested. (Auth.)

39-2366
Vertical profiles of CCl3F (F-11) and CCl2F2 (F-12) in the central Arctic Ocean basin.
Wallace, D.W.R., et al, *Journal of geophysical research*, Jan. 20, 1985, 90(C1), p.1155-1166, 32 refs.
Moore, R.M.
Sea water, Water chemistry, Arctic Ocean.

39-2367
Flora and groupings of lower plants in natural and anthropogenous extreme environmental conditions. [Flora i gruppirovki nizshikh rastenii v prirodnykh i antropogennykh ekstremal'nykh usloviiakh sredy]
Martin, J., ed, Tallin, 1984, 224p., In Russian. For selected papers see 39-2368 through 39-2371. Refs. passim.
Tundra, Lichens, Mosses, Alpine tundra, Ecosystems, Soil microbiology, Algae, Polar regions, Plant ecology, Cryogenic soils, Plant physiology.

39-2368
Problem of extremity in the ecology of cryptogamic plants. [Problema ekstremal'nosti v ekologii nizshikh rastenii]
Martin, IU.L., Flora i gruppirovki nizshikh rastenii v prirodnykh i antropogennykh ekstremal'nykh usloviiakh sredy (Flora and groupings of lower plants in natural and anthropogenous extreme environmental conditions) edited by J. Martin, Tallin, 1984, p.9-19, In Russian. 28 refs.
Tundra, Algae, Mosses, Lichens, Soil microbiology, Plant ecology.
The differences between the lichen distribution in western and eastern parts of Antarctica are discussed and tabulated. Leading ecological factors of the antarctic cold deserts are large diurnal and seasonal variations of temperature, physiological aridity, intensive ultraviolet radiation and strong winds. Accordingly, the lichens have attained special morphological and ecophysiological adaptations. Desiccation resistance and cold resistance of antarctic lichens are very high. The lichens can remarkably alter the temperature regime of their substrates. Desiccated lichen thalli are able to begin photosynthesis immediately after the uptake of water vapour from the air. The lichens can be active even under the snow cover. Many of the antarctic crustose lichen species have convex or hemispherelike areols, with twice the surface area of the flat ones. As the volume of convex areols increases faster than surface, this adaptation is ecologically profitable for nutrient accumulation and storage, as well as gas exchange and illumination. Important adaptations are the endolithic growth form and dark colour of the thalli. (Auth. mod.)

39-2369
Initial revegetation stages of bare ground in southern tundras of the Taymyr Peninsula. [Nachal'nye stadii zarastaniia piaten gologo grunta v iuzhnykh tundrakh Taimyra]
Pïn, T.Kh., et al, Flora i gruppirovki nizshikh rastenii v prirodnykh i antropogennykh ekstremal'nykh usloviiakh sredy (Flora and groupings of lower plants in natural and anthropogenous extreme environmental conditions) edited by J. Martin, Tallin, 1984, p.20-50, In Russian. 17 refs.
Sdobnikova, N.V., Parinkina, O.M.
Tundra, Soil erosion, Revegetation, Soil microbiology, Plant ecology, Ecosystems.

39-2370
Lichens in the bald-peak belt of the Badzhal Range (Khabarovsk territory). [O lishainikakh gol'tsovogo poiasa Badzhal (Khabarovskii kraf)]
Randlane, T.V., Flora i gruppirovki nizshikh rastenii v prirodnykh i antropogennykh ekstremal'nykh usloviiakh sredy (Flora and groupings of lower plants in natural and anthropogenous extreme environmental conditions) edited by J. Martin, Tallin, 1984, p.120-133, In Russian.
Alpine landscapes, Rock streams, Vegetation patterns, Lichens, Plant ecology, Ecosystems.

39-2371
Flora and distribution of terricolous lichens in southern tundras of Taymyr. [Flora i rasprostranenie napochvennykh lishainikov iuzhnykh tundr Taimyra]
Pïn, T.Kh., Flora i gruppirovki nizshikh rastenii v prirodnykh i antropogennykh ekstremal'nykh usloviiakh sredy (Flora and groupings of lower plants in natural and anthropogenous extreme environmental conditions) edited by J. Martin, Tallin, 1984, p.134-172, In Russian. Refs. p.166-171.
Bibliographies, Tundra, Vegetation patterns, Lichens, Plant ecology, Ecosystems.

39-2372
Antarctic ice charts, 1979-1980.
U.S. Naval Polar Oceanography Center, Suitland, MD, May 1981, 120p. AD-A098 666.
Sea ice distribution.
This antarctic sea ice atlas contains weekly charts depicting Southern Hemisphere ice conditions and extents. The information presented was prepared under operational time constraints principally from satellite imagery supplemented by conventional observations. A table summarizes satellite data availability for 1979 and 1980.

39-2373
Long range forecasting of manifestations of exogenic geological processes. [Dolgovremennye prognozy proiavleniia ekzogennykh geologicheskikh protsessov]
Trofimov, V.T., ed, Moscow, Nauka, 1985, 152p., In Russian with abridged English table of contents enclosed.
Frozen fines, Geologic processes, Geocryology, Rock streams, Geomorphology, Environmental protection, Models, Climatic changes, Hydrothermal processes, Theories, Human factors, Paludification, Slope processes, Long range forecasting, Weathering, Baykal Amur railroad.

39-2374
Empirical formula for calculating frost resistance of concrete. [Empiricheskaia formula dlia rascheta morozostoikosti betona]
Lazarev, A.D., Kompozitsionnye materialy i konstruktsii dlia sel'skogo stroitel'stva (Composite materials and structures for rural construction) edited by IU.B. Potapov, Saransk, 1983, p.86-91, In Russian. 5 refs.
Winter concreting, Concrete hardening, Concrete freezing, Concrete admixtures, Concretes, Air entrainment, Frost resistance, Reinforced concretes.

39-2375
Comparing the characteristics of stable snow and solid atmospheric precipitation. [Sravnenie kharakteristik ustoichivogo snezhnogo pokrova i tverdykh osadkov]
Loktionova, E.M., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1984, Vol.485, p.74-81, In Russian. 4 refs.
Shver, Ts.A.
Precipitation (meteorology), Snow cover stability, Snow accumulation, Snow density, Metamorphism (snow).

39-2376
Distribution of icing load over the USSR. [Raspredelenie gololednykh nagruzok na territorii SSSR]
Zakharov, A.G., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1984, Vol.485, p.87-93, In Russian. 13 refs.
Glaze, Icing, Hoarfrost, Wet snow, Power line icing, Ice loads, Ice accretion, Wind factors, Alpine landscapes, Charts.

39-2377
Icing regime of tall structures. [Rezhim obledeneniia vysotnykh sooruzhenii]
Mytarev, M.N., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1984, Vol.485, p.94-103, In Russian. 12 refs.
Towers, Icing, Hoarfrost, Wet snow, Ice accretion, Ice loads, Measuring instruments, Wind factors.

39-2378
Influence of global rise in temperature on sea ice in the Arctic. [Vliianie global'nogo potepleniia na morskie l'dy v Arktike]
Efimova, N.A., *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1984, Vol.295, p.3-10, In Russian. 21 refs.
Sea ice distribution, Ice cover thickness, Ice accretion, Ice melting, Climatic changes, Air temperature, Solar radiation, Arctic Ocean.

39-2379
Mineralization and ion composition of ice in the Irtysh-Karaganda channel. [Mineralizatsiia i ionnyi sostav l'da kanala Irtysh-Karaganda]
Amirgaliev, N.A., et al, *Gidrokhimicheskie materialy*, 1984, Vol.90, p.64-76, In Russian. 18 refs.
Tarasov, M.N., Lopareva, T.IA., Nakupbekov, S.
Channels (waterways), Water chemistry, Ice formation, Ice composition, Ions, Ice salinity, Ice surface, Minerals.

39-2380
Results of studying lightning protection of 154 and 330 kV substations, located in areas of high electrical resistivity of ground. [Rezul'taty issledovaniia grozozashchity podstantsii 154 i 330 kV raspolozhennykh v raionakh s vysokim udel'nym soprotivleniem grunto]
Zarkhi, I.M., et al, *Leningrad. Politekhnicheskii institut. Trudy*, 1983, No.392, p.42-45, 101, In Russian with English summary. 6 refs.
Lightning, Electrical resistivity, Electrical grounding, Permafrost, Thunderstorms.

39-2381
Proceedings.
International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985, New York, American Society of Mechanical Engineers, 1985, 2 vols., Refs. passim. For selected papers see 39-2382 through 39-2438.
Offshore structures, Offshore drilling, Ice conditions, Ice loads, Impact strength, Engineering, Construction materials, Oceanography, Meetings.

39-2382
Interaction of waves with groups of vertical cylindrical bodies in ice-covered seas.
Owen, D.G., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.1, New York, American Society of Mechanical Engineers, 1985, p.334-342, 11 refs.
Belov, V.V.
Ice solid interface, Offshore structures, Wave propagation, Hydrodynamics, Ice cover effect, Loads (forces), Ice conditions, Sea ice, Ocean waves, Ice breaking, Boundary layer, Analysis (mathematics).

39-2383
Mooring and anchoring in ice-infested waters.
Owen, D.G., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.1, New York, American Society of Mechanical Engineers, 1985, p.424-431, 23 refs.
Smith, G.H.
Ice cover effect, Moorings, Anchors, Subsea permafrost, Ocean bottom, Ice conditions, Design, Stability.

39-2384
Ice plug anchor—development of a new anchor for use in snow and ice.
Maidl, B., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.1, New York, American Society of Mechanical Engineers, 1985, p.442-450, 7 refs.
Bruhl, H.
Anchors, Ice solid interface, Ice strength, Loads (forces), Shear stress, Strength, Tests, Stresses, Plugging, Antarctica—Georg von Neumayer Station.
A research order enabled the Department of Construction Methods and Construction Management to develop a new anchor for snow and ice that shows greater resistance to extraction than commonly used screw or dead-man anchors. At Georg-von-Neumayer-Station, Antarctica, test programs had been undertaken in the years 1981 and 1983 investigating construction, technique of installation and load capacity. The results lead to a nomogram determining the permissible load or the time to failure of the ice plug anchor with regard to structural parameters. A comparison to screw and dead-man anchors established the feasibility of using ice plug anchors in polar snow. Ice plug anchors showed higher load capacity, less strain and a longer time to failure. This report shows test arrangement, realization and results.

39-2385
Protection of Arctic submarine pipelines against ice scour.
Nessim, M.A., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.1, New York, American Society of Mechanical Engineers, 1985, p.610-617, 17 refs.
Jordan, I.J.
Ice scoring, Pipelines, Ocean bottom, Trenching, Protection, Damage, Safety, Models.

39-2386
Wind-induced vibration of aboveground Arctic pipelines.
Hanegger, D.G., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.1, New York, American Society of Mechanical Engineers, 1985, p.646-652.
Nyman, D.J., Nyman, K.J.
Suspended pipelines, Vibration, Wind factors, Fatigue (materials), Cold weather tests, Polar regions, Damage, Temperature effects, Steel structures, Mathematical models.

39-2387
Motion and structural response of a hydroelastic semi-submersible model to waves and ice impacts.
El-Tahan, H., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.1, New York, American Society of Mechanical Engineers, 1985, p.753-761, 35 refs.
Arockiasamy, M., Swamidas, A.S.J.
Offshore structures, Ice loads, Hydraulic structures, Ocean waves, Impact strength, Loads (forces), Ice pressure, Models, Tests, Icebergs, Platforms.

39-2388
Analytical and experimental studies of the heat transfer around a vertical ice wall in fresh water at various temperatures.
Dutton, C.R., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.1-5, 7 refs.
Sharan, A.M.
Ice thermal properties, Heat transfer, Temperature distribution, Ice surface, Velocity, Walls, Mathematical models.

39-2389
Overview of marine icing research.
Lozowski, E.P., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.6-15, 32 refs.
Gates, E.M.
Ship icing, Ice accretion, Offshore structures, Loads (forces), Floating structures, Static loads, Wind pressure, Sea spray, Freezing, Stability, Salinity, Models, Buoyancy.

39-2390
Interaction of self heated thermistor probe with a freezing front moving through moist porous media.
Pinchak, A.C., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.16-21, 5 refs.
Freeze thaw cycles, Porous materials, Thermistors, Soil water, Sands, Thermal conductivity, Freezing points, Interfaces.

39-2391
Analyzing numerical errors in domain heat transport models using the CVBEM.
Hromadka, T.V., II, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.22-30, 9 refs.
Freeze thaw cycles, Heat transfer, Soil water, Latent heat, Phase transformations, Accuracy, Mathematical models, Boundary layer.

39-2392
Laboratory tests and analysis of thermosyphons with inclined evaporator sections.
Zarling, J.P., et al, MP 1853, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.2-37-16 refs.
Haynes, F.D.
Subgrade soils, Cooling, Evaporation, Heat transfer, Thermal conductivity, Wind tunnels, Wind velocity, Air temperature, Foundations, Gravel, Analysis (mathematics)
Subgrade cooling [illegible] thermosyphons with [illegible] laboratory study was [illegible] formal [illegible] ration angles [illegible] standard [illegible] was tested in CRREL's [illegible] expressions are [illegible] of wind speed and ambient air temperature for each of the inclined evaporator angles. An approximate analytical method is also presented for foundation thermal design using thermosyphons under buildings with a slab-on-grade foundation. Heat gains from the slab to the thermosyphon as well as the evaporator temperature are presented as functions of time.

39-2393
Freezing of soil with phase change occurring over a finite temperature zone.
Lunardini, V.J., MP 1854, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.38-46, 10 refs.
Soil freezing, Phase transformations, Temperature distribution, Analysis (mathematics), Freeze thaw cycles, Unfrozen water content, Thermal conductivity.
While many materials undergo phase change at a fixed temperature, soil systems exhibit a definite zone of phase change. The variation of unfrozen water with temperature causes the soil to freeze or thaw over a finite temperature range. Exact and approximate solutions are given for conduction phase change of plane layers of soil with water contents that vary linearly, quadratically, and exponentially with temperature. The temperature and phase change depths are found to vary significantly from those of the constant temperature or Neumann problem.

39-2394
Offshore permafrost well design lateral soil movement-induced bending strains.
Laut, S.W., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.47-51, 8 refs.
Bradshaw, M.T.
Subsea permafrost, Well casings, Permafrost thermal properties, Ground thawing, Soil mechanics, Soil creep, Compressive properties, Tensile properties, Strains.

39-2395
Laboratory facility for testing sediments containing gas hydrates.
Wittebolle, R.J., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.52-58, 11 refs.
Sego, D.C.
Hydrates, Natural gas, Sands, Soil freezing, Clathrates, Sediments, Thermal conductivity, Laboratory techniques.

39-2396
Creep of frozen sand under isotropic and deviatoric components of stress.
Domaschuk, L., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.59-64, 7 refs.
Knutsson, S., Shields, D.H., Rahman, M.G.
Frozen ground mechanics, Soil creep, Stress strain diagrams, Sands, Compressive properties, Tests.

39-2397
Centrifuge modelling of underwater permafrost and sea ice.
Palmer, A.C., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.65-69, 15 refs.
Schofield, A.N., Vinson, T.S., Wadhams, P.
Subsea permafrost, Sea ice, Ground thawing, Frozen ground settling, Heat transfer, Ice elasticity, Ice creep, Models, Settlement (structural).

39-2398
Laboratory and field evaluation of an ultrasonic distance meter for measurement of snow surface profiles.
Pinchak, A.C., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.70-74, 2 refs.
Asher, R.A.
Snow surface, Profiles, Ultrasonic tests, Surface properties, Measuring instruments.

39-2399
On some Arctic drilling units recently constructed in Japan.
Kitagawa, H., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.75-81, 8 refs.
Matsushima, Y.
Offshore drilling, Offshore structures, Caissons, Artificial islands, Beaufort Sea.

39-2400
Effective deepwater drilling/production structure for the Beaufort Sea.
Padron, D.V., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.90-97, 7 refs.
Joneidi, F., Nixon, J.F.
Offshore drilling, Subsea permafrost, Offshore structures, Frozen ground physics, Shear strength, Soil creep, Caissons, Steel structures, Soil freezing, Beaufort Sea.

39-2401
Construction and quality assurance for super-CIDS.
LaFrough, R.W., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.98-104.
Zinserling, M., McNary, J.F.
Offshore structures, Offshore drilling, Concrete structures, Concrete admixtures, Compressive properties, Artificial islands, Design, Beaufort Sea.

39-2402
Design, installation, and performance of a berm supported exploration structure in the Beaufort Sea.
Hewitt, K.J., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.105-113, 7 refs.
Berzins, W.E., Fitzpatrick, J.P., Hogeboom, H.G.
Offshore structures, Ice conditions Ice loads, Offshore drilling, Caissons, Exploration, Ocean waves, Foundations, Design, Temperature effects, Ice mechanics, Beaufort Sea.

39-2403
Arctic double cone structure for 40-200 ft. (12-60m) water depths.
Krahl, N.W., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.114-119, 6 refs.
Buslov, V.M.
Offshore structures, Ice mechanics, Ice loads, Hydrocarbons, Exploration, Ice override, Soil strength, Profiles, Ocean bottom, Beaufort Sea.

39-2404
Stability monitoring programs in hazardous ice conditions.
Berzins, W.E., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.120-127, 6 refs.
Depaoli, S., Nimmo, R.A., Melrose, G.R.
Offshore structures, Ice conditions, Monitors, Ice loads, Offshore drilling, Caissons, Ice pressure, Foundations, Deformation, Design criteria, Beaufort Sea.

39-2405
Some considerations on the designing of Arctic structures.
Ojima, T., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.128-134, 6 refs.
Matsushima, Y., Yamashita, S.
Offshore structures, Ice loads, Ice structure, Equipment, Design, Models, Flexural strength, Ice cover thickness, Compressive properties.

39-2406
Design of Arctic waterflood intake structures.
Cox, J.C., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.135-142, 4 refs.
Behnke, D.L., Machemehl, J.L.
Water intakes, Ice water interface, Sea water, Channels (waterways), Ice conditions, Structures, Oil recovery, Ocean waves, Ocean currents, Sedimentation, Design criteria.

39-2407
Description of some concepts for exploratory drilling in Sub-Arctic and Arctic waters.
Marthinsen, A., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.143-154, 20 refs.
Grov, E.
Offshore drilling, Ice conditions, Offshore structures, Ice loads, Exploration, Cold weather operation, Design, Platforms.

39-2408
Determining the characteristic length of floating ice sheets by moving loads.
Sodhi, D.S., et al, MP 1855, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.155-159, 6 refs.
Martinson, C.R., Tucker, W.B.
Floating ice, Ice sheets, Ice cover thickness, Dynamic loads, Ice deformation, Velocity, Tests, Length, Deflection.
To determine the characteristic length of a floating ice sheet, the deflection of the ice sheet must be measured in response to a known load. Deflection measurements with a deflectometer require reference to a fixed datum. A simple deflection measuring technique is described here that is based on integration of the response of a sensitive slope transducer to a moving load at constant speed. This procedure does not require reference to a fixed datum; instead the gravitational field acts as the datum. The characteristic lengths obtained from the slope-integration method compare very favorably with those obtained from direct measurement of deflections.

39-2409
Quantitative analysis of ice sheet failure against an inclined plane.
Frederking, R.M.W., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.160-169, 10 refs.
Timco, G.W.
Ice sheets, Offshore structures, Flexural strength, Ice breaking, Ice solid interface, Ice loads, Floating ice, Ice pressure, Mathematical models, Ice cracks.

39-2410
Load bearing capacity of an ice cover subjected to concentrated loads.
Fransson, L., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.170-176, 15 refs.
Ice loads, Floating ice, Bearing strength, Ice cover strength, Loads (forces), Ice elasticity, Ice deformation, Deflection.

39-2411
Numerical algorithm to predict the visco-elastic response of ice under different loading conditions.
Hamza, H., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.177-185, 15 refs.
Ice loads, Ice elasticity, Viscoelasticity, Stress strain diagrams, Loads (forces), Compressive properties, Tensile properties, Analysis (mathematics).

39-2412
Tensile strength of multi-year pressure ridge sea ice samples.
Cox, G.F.N., et al, MP 1856, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.186-193, 20 refs.
Richter-Menge, J.A.
Pressure ridges, Ice strength, Tensile properties, Sea ice, Stress strain diagrams, Tests.
Thirty-six constant strain-rate uniaxial tension tests were performed on vertically oriented multi-year pressure ridge samples from the Beaufort Sea. The tests were performed using a closed-loop electro-hydraulic testing machine at two strain rates (1/100000 and 1/1000/s) and two temperatures (-20 and -5C). This paper summarizes the sample preparation and testing techniques used in the investigation and presents data on the tensile strength, initial tangent modulus, and failure strain of the ice.

39-2413
Structure, salinity and density of multi-year sea ice pressure ridges.
Richter-Menge, J.A., et al, MP 1857, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.194-198, 11 refs.
Cox, G.F.N.
Pressure ridges, Ice structure, Ice salinity, Ice density, Sea ice, Ice loads, Profiles, Beaufort Sea.
Data are presented on the variation of ice structure, salinity and density in multi-year pressure ridges from the Beaufort Sea. Two continuous multi-year pressure ridge cores are examined as well as ice sample data from numerous other pressure ridges. The results suggest that the large scale properties of multi-year pressure ridges are not isotropic, and that the use of anisotropic ridge models may result in lower design ridge ice loads.

39-2414
Flexural strength and fracture toughness of urea model ice.
Timco, G.W., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.199-208, 40 refs.
Ice strength, Ice models, Urea, Artificial ice, Sea ice, Loads (forces), Flexural properties, Ice solid interface, Ice cracks, Tensile properties, Ice growth.

39-2415
Confined strength and deformation of second-year columnar-grained sea ice in Mould Bay.
Sinha, N.K., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.209-219, 19 refs.
Ice strength, Ice deformation, Sea ice, Ice crystal structure, Compressive properties, Loads (forces), Ice density, Ice salinity, Tests, Stress strain diagrams, Time factor.

39-2416
Grain size and the compressive strength of ice.
Cole, D.M., MP 1858, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.220-226, 15 refs.
Ice strength, Compressive properties, Grain size, Stress strain diagrams, Tests.
This work presents the results of uniaxial compression tests on freshwater polycrystalline ice. Grain size of the test material ranged from 1.5 to 5 mm, strain rate ranged from 1/1,000,000 to 1/100 s and the temperature was -5C. The grain size effect emerged clearly as the strain rate increased to 1/100,000 s and persisted to the highest applied strain rates. On average, the stated increase in grain size brought about a decrease in peak stress of approximately 4%. The occurrence of the grain size effect coincided with the onset of visible cracking. The strength of the material increased to a maximum at a strain rate of 1/1,000 s, and then dropped somewhat as the strain rate increased further to 1/100 s. Strain at peak stress generally tended to decrease with both increasing grain size and increasing strain rate. The results are discussed in terms of the deformational mechanisms which lead to the observed behavior.

39-2417
Damage mechanics model for uniaxial deformation of ice.
Karr, D.G., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.227-233, 14 refs.
Ice deformation, Stress strain diagrams, Ice crystal structure, Ice strength, Ice elasticity, Ice plasticity, Brittleness, Mathematical models, Damage.

39-2418
Technique for producing ice from NaCl brine for studying fundamental deformation behavior.
Godavarti, P.S., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.234-237, 12 refs.
Pharr, G.M.
Ice formation, Saline soils, Frozen ground physics, Brines, Ice deformation, Liquid phases, Freezing, Compressive properties, Ice growth, Microstructure.

39-2419
Uni-axial constitutive equation of ice from beam tests.
Nitoulchakis, P.C., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.248-254, 8 refs.
Wierzbicki, T.
Ice physics, Tensile properties, Compressive properties, Stresses, Strains, Analysis (mathematics), Tests.

39-2420
In-ice calibration tests for an elongated, uniaxial brass ice stress sensor.
Johnson, J.B., MP 1859, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.244-249, 8 refs.
Ice loads, Stresses, Measuring instruments, Loads (forces), Design, Tests.
An elongated, uniaxial brass ice stress sensor was developed by the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL). Laboratory calibration tests have been conducted on a 60 x 25 x 5 mm [2.4 x 1.0 x 0.2 in.] brass plate to which the sensor was attached. The sensor's response characteristics [illegible] stress sensor was a stress concentration [illegible] 2.3 and [illegible] sensitive to [illegible] stresses [illegible] 50 psi [207 kPa]. Maximum stress [illegible] the stress concentration factor increases [illegible] a time delay response to load. [illegible] were measured to verify the measured stress [illegible] load was applied [illegible] stress test. Interpretation of measured [illegible] ambient ice stresses [illegible]

39-2421
Ice sheet indentation resistance in the creep domain.
Ladanyi, B., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.250-254, 24 refs.
Ice pressure, Ice creep, Offshore structures, Ice mechanics, Ice sheets, Ice deformation, Ice cover thickness, Analysis (mathematics).

39-2422
Analysis of iceberg impacts with gravity base structures at Hibernia.
Bass, D., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.255-259, 5 refs.
Gaskill, H., Riggs, N.
Icebergs, Impact strength, Offshore structures, Ice loads, Loads (forces), Ice solid interface, Mathematical models.

39-2423
Flexural and longitudinal elastic wave propagation theory applied to ice floe impact with sloping structures.
Tuk, C.H., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.260-270, 4 refs.
Ice floes, Impact strength, Offshore structures, Wave propagation, Ice pressure, Ice loads, Slope orientation, Theories, Boundary value problems.

39-2424
Some aspects of ice engineering in Japan.
Kitagawa, H., [illegible] International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.271-283, 53 refs.
Yasuhara, N.
Ice surveys, Snow surveys, Ice navigation, Marine transportation, Frozen ground, Remote sensing, Engineering, Research projects, Offshore structures, Icebreakers, Japan.

39-2425
Reinforced underwater ice berm.
[illegible] International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. [illegible] Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.284-287, 4 refs.
Hydraulic structures, Arctic drilling islands, Caissons, Offshore structures, Ice reinforcement, Ice solid interface, Ice cover thickness, Ice loads, Loads (forces), Ice mechanics, Ice deformation, Ice cover strength, Ice pressure, Ice ridges, Ice floes, Ice sheets, Ice breaking, Ice models, Ice solid interface, Ice cracks, Tensile properties, Ice growth.

39-2426
Ice forces on offshore structures.
Croasdale, K.R., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.288-296, 10 refs.
Cammaert, A.B.
Ice loads, Offshore structures, Ice pressure, Ice solid interface, Ice cover thickness, Ice deformation, Ice cover strength, Ice ridges, Ice floes, Ice sheets, Ice breaking, Ice models, Ice solid interface, Ice cracks, Tensile properties, Ice growth.

39-2427
Ice forces on cylindrical structures.
Croasdale, K.R., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.297-305, 10 refs.
Cammaert, A.B.
Ice loads, Offshore structures, Ice pressure, Ice solid interface, Ice cover thickness, Ice deformation, Ice cover strength, Ice ridges, Ice floes, Ice sheets, Ice breaking, Ice models, Ice solid interface, Ice cracks, Tensile properties, Ice growth.

39-2428
Ice forces on vertical piers and caissons.
Croasdale, K.R., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.306-314, 10 refs.
Cammaert, A.B.
Ice loads, Offshore structures, Ice pressure, Ice solid interface, Ice cover thickness, Ice deformation, Ice cover strength, Ice ridges, Ice floes, Ice sheets, Ice breaking, Ice models, Ice solid interface, Ice cracks, Tensile properties, Ice growth.

39-2429
Ice forces on inclined structures.
Croasdale, K.R., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.315-322, 10 refs.
Cammaert, A.B.
Ice loads, Offshore structures, Ice pressure, Ice solid interface, Ice cover thickness, Ice deformation, Ice cover strength, Ice ridges, Ice floes, Ice sheets, Ice breaking, Ice models, Ice solid interface, Ice cracks, Tensile properties, Ice growth.

39-2430
Ice forces on narrow vertical structures.
Croasdale, K.R., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.323-331, 10 refs.
Cammaert, A.B.
Ice loads, Offshore structures, Ice pressure, Ice solid interface, Ice cover thickness, Ice deformation, Ice cover strength, Ice ridges, Ice floes, Ice sheets, Ice breaking, Ice models, Ice solid interface, Ice cracks, Tensile properties, Ice growth.

39-2431
Ice forces on wide vertical structures.
Croasdale, K.R., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.332-340, 10 refs.
Cammaert, A.B.
Ice loads, Offshore structures, Ice pressure, Ice solid interface, Ice cover thickness, Ice deformation, Ice cover strength, Ice ridges, Ice floes, Ice sheets, Ice breaking, Ice models, Ice solid interface, Ice cracks, Tensile properties, Ice growth.

39-2426
Winter ice forces on large offshore structures.
Hamza, H., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.286-293, 25 refs.
Ice loads, Offshore structures, Rheology, Ice elasticity, Viscoelasticity, Ice mechanics, Stresses, Temperature effects, Design criteria, Winter, Artificial islands, Ice pressure.

39-2427
Numerical analysis of a caisson retained gravel island.
Saari, K.H.O., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.294-301, 4 refs.
Ylinen, A.M.
Artificial islands, Offshore structures, Caissons, Ice loads, Soil stabilization, Stresses, Concrete structures, Gravel, Mathematical models.

39-2428
Some factors influencing iceberg scour estimates.
Prasad, K.S.R., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.302-309, 15 refs.
Chari, T.R.
Ice scoring, Icebergs, Ocean bottom, Soil strength, Velocity, Shear strength, Mathematical models.

39-2429
Scale effect in ice-structure interactions.
Bercha, F.G., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.310-314, 22 refs.
Brown, T.G.
Ice solid interface, Ice mechanics, Offshore structures, Ice strength, Compressive properties, Ice breaking.

39-2430
Flexural-gravity waves in an ice cover induced by a moving load.
Khrapatyĭ, N.G., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.315-320, 10 refs.
Takhteev, V.A.
Wave propagation, Ice cover, Dynamic loads, Analysis (mathematics), Velocity.

39-2431
Some latest developments in icebreaker technology.
Schwarz, J., International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.321-329, 22 refs.
Icebreakers, Ice breaking, Ice conditions, Ice navigation.

39-2432
Model test of an ice class bulk carrier with the Thyssen/Waas bow form.
Freitas, A., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.330-335, 8 refs.
Nishizaki, R.S.
Icebreakers, Ice breaking, Ice conditions, Ice navigation, Tests, Models.

39-2433
Determination of propeller-ice milling loads.
Kotras, T., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.336-343, 14 refs.
Ice navigation, Propellers, Ice loads, Ice breaking, Ice cutting, Loads (forces).

39-2434
Ship ice impact analysis.
Koehler, P.E., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.344-350, 11 refs.
Jorgensen, L.
Ships, Ice loads, Impact strength, Ice navigation, Ice solid interface, Ice floes, Damage, Ice pressure, Analysis (mathematics).

39-2435
Materials for tension leg platform tethers.
Akahide, K., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.351-356, 8 refs.
Kikukawa, S., Hashimoto, O., Narumoto, A.
Offshore structures, Cold weather performance, Corrosion, Mechanical properties, Tensile properties, Fatigue (materials), Steel structures, Sea water, Platforms.

39-2436
New high-toughness materials and large heat-input welding processes for offshore structures.
Fukagawa, M., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.373-380, 7 refs.
Offshore structures, Ice loads, Construction materials, Welding, Ice conditions, Steel structures, Tensile properties, Ice floes.

39-2437
Extra heavy steel plates produced by thermo-mechanical process for Arctic offshore structures and ships in icy sea areas.
Tomita, Y., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.381-388, 5 refs.
Offshore structures, Steel structures, Ice conditions, Mechanical properties, Cold weather construction, Cold weather performance, Welding, Strength, Sea ice, Cracking (fracturing).

39-2438
Base underfilling for Arctic platforms.
Buslov, V.M., et al, International Offshore Mechanics and Arctic Engineering Symposium, 4th, Dallas, Texas, Feb. 17-21, 1985. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1985, p.389-396, 9 refs.
Brakel, J.
Offshore structures, Ice loads, Cold weather construction, Ocean bottom, Sands, Stability, Design, Offshore drilling, Tunneling (excavation), Platforms.

39-2439
Large-panel municipal buildings in the Far North. [Grazhdanskie krupnopanel'nye zdaniia na Kraĭnem Severe],
Shkliarov, N.D., et al, Leningrad, Strolizdat, 1984, 172p., In Russian with English table of contents enclosed. 14 refs.
Kalinin, M.S.
Urban planning, Large panel buildings, Municipal engineering, Microclimatology, Permafrost beneath structures, Residential buildings, Industrial buildings, Structural design.

39-2440
Managing water resources for Alaska's development; proceedings.
Aldrich, J.W., ed, *Alaska. University. Institute of Water Resources. Report*, Nov. 1983, IWR-105, var. p., Refs. passim. For selected papers see 39-2441 through 39-2444.
Water reserves, Glacial hydrology, River ice, Meetings, Water balance, Ground water, Sea ice, Floods, United States—Alaska.

39-2441
Influence of temperate glaciers on flood events in maritime Alaska.
Humphrey, J.H., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1983, IWR-105, Managing water resources for Alaska's development, proceedings, edited by J.W. Aldrich, p.1(1)-1(26), Refs. p. 1(23)-1(26).
Newton, C.J., Black, R.D.
Glacial hydrology, Floods, Runoff, Snowmelt, Geomorphology, Glacial rivers, Seasonal variations, Design, United States—Alaska.

39-2442
Sea ice characteristics in the nearshore environment.
Hoch, D.M., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1983, IWR-105, Managing water resources for Alaska's development; proceedings, edited by J.W. Aldrich, p.2(1)-2(15), 6 refs.
Drage, B.T.
Offshore structures, Ice loads, Sea ice, Ice conditions, Ice strength, Ice temperature, Ice cover thickness, Ice physics, Engineering, Design, Temperature effects, Beaufort Sea.

39-2443
Data generated from Alaskan hydropower development.
Bredthauer, S.R., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1983, IWR-105, Managing water resources for Alaska's development; proceedings, edited by J.W. Aldrich, p.6(1)-6(32), 12 refs.
Coffin, J.H., Marchegiani, E.A.
Water reserves, Ice conditions, Hydrology, Snow hydrology, River ice, Lake ice, Stream flow, Glacier melting, Forecasting, Electric power, United States—Alaska.

39-2444
Environmental effects of ice processes on the Susitna River.
Schoch, G.C., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1983, IWR-105, Managing water resources for Alaska's development; proceedings, edited by J.W. Aldrich, p.8(1)-8(31), 14 refs.
Bredthauer, S.R.
River ice, Ice conditions, Dams, Ice formation, Ice jams, Ice breakup, Frazil ice, Electric power, United States—Alaska—Susitna River.

39-2445
Alaska's water: a critical resource; proceedings.
Bredthauer, S.R., ed, *Alaska. University. Institute of Water Resources. Report*, Nov. 1984, IWR-106, 218p., Refs. passim. For selected papers see 39-2446 and 39-2447.
Water reserves, Runoff forecasting, Glacial hydrology, Snow hydrology, Meetings, River basins, Water pollution, United States—Alaska.

39-2446
Relationship between snow course information and runoff.
Marchegiani, E.A., *Alaska. University. Institute of Water Resources. Report*, Nov. 1984, IWR-106, Alaska's water: a critical resource; proceedings, edited by S.R. Bredthauer, p.37-50, 7 refs.
Snow surveys, Runoff forecasting, River basins, Seasonal variations, United States—Alaska—Susitna River.

39-2447
Impact of glaciers on long-term basin water yield.
Bredthauer, S.R., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1984, IWR-106, Alaska's water: a critical resource; proceedings, edited by S.R. Bredthauer, p.51-59, 11 refs.
Harrison, W.D.
Water reserves, Glacial hydrology, Runoff forecasting, Glacier mass balance, Water supply, Models, United States—Alaska—Bradley Lake.

39-2448
Dated wood from Alaska and the Yukon: implications for forest refugia in Beringia.
Hopkins, D.M., et al, *Quaternary research*, May 1981, 15(3), p.217-249, Refs. p.246-249.
Smith, P.A., Matthews, J.V., Jr.
Trees (plants), Radioactive age determination, Forest land, Vegetation, Fossils, Paleoclimatology, Pleistocene, Palynology, United States—Alaska, Canada—Yukon River.

39-2449
Microwave remote sensing of snow cover.
Schanda, E., et al, *International journal of remote sensing*, Jan.-Mar. 1983, 4(1), p.149-158, 14 refs.
Mätzler, C., Künzi, K.
Snow cover distribution, Remote sensing, Microwaves, Snow melting, Snow hydrology, Snow water equivalent, Snow crystal structure, Radiometry, Runoff, Grain size.

39-2450
Night-time observations of snow using visible imagery.
Foster, J.L., *International journal of remote sensing*, Oct.-Dec. 1983, 4(4), p.785-791, 11 refs.
Snow cover distribution, Remote sensing, Photointerpretation, Detection, Moon, Spacecraft, Diurnal variations.

39-2451
Tensile strength of unsaturated soils.
Snyder, V.A., et al, *Soil Science Society of America. Journal*, Jan.-Feb. 1985, 49(1), p.58-65, 46 refs.
Miller, R.D.
Soil strength, Frost heave, Tensile properties, Soil aggregates, Fracturing, Saturation, Capillarity, Cohesion, Analysis (mathematics), Theories.

39-2452
Impact of human activities on spruce forest of northern Tien Shan and the dynamics of its recovery. [Antropogennaia i vosstanovitel'naia dinamika elovykh lesov Severnogo Tian-Shania],
Roldugin, I.I., Alma-Ata, Nauka, 1983, 208p., In Russian with English table of contents enclosed. Refs. p.189-200.
Forest land, Soil erosion, Environmental protection, Revegetation, Mountain soils, Soil stabilization, Mudflows, Forestry, Cryogenic soils, Slope processes, Alpine landscapes, Human factors.

39-2453
Dynamic interactions between floating ice and offshore structures.
Crotzau, P., *California. University, Berkeley. Earthquake Engineering Research Center. Report*, May 1983, UCB/EERC-83/06, 335p., Refs. p.315-327.
Floating ice, Offshore structures, Ice loads, Dynamic loads, Ice solid interface, Ice conditions, Ice pressure, Hydrodynamics, Ice floes, Mathematical models, Platforms.

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Icebergs, Ice temperature, Temperature distribution, Seasonal variations, Air temperature.

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Method to measure iceberg impact areas remotely on a large structure.
Hudson, R.D., et al, *Iceberg research,* Nov. 1983, No.6, p.13-17, 6 refs.
Booth, A.D.
Icebergs, Offshore structures, Impact strength, Remote sensing, Ice loads, Ice mechanics, Ice solid interface, Velocity, Ice volume, Analysis (mathematics), Accuracy.

39-2527
Statistical prediction of iceberg trajectories.
Garrett, C., *Iceberg research,* Mar. 1984, No.7, p.3-8, 8 refs.
Icebergs, Ice mechanics, Drift, Statistical analysis, Accuracy, Forecasting, Analysis (mathematics).

39-2528
Forecasting iceberg drift: a comparative study.
Gaskill, H.S., et al, *Iceberg research,* Mar. 1984, No.7, p.8-13, 11 refs.
Terry B., Riggs, N.
Icebergs, Drift, Ice mechanics, Forecasting, Mathematical models.

39-2529
Grounding and scouring icebergs on the Labrador Shelf.
Woodworth-Lynas, C.M.T., et al, *Iceberg research,* Mar. 1984, No.7, p.13-20, 8 refs.
Simms, A., Rendell, C.M.
Icebergs, Ice scoring, Grounded ice, Drift, Ice mechanics, Canada—Labrador.

39-2530
Announcement of 1984 International Ice Patrol Service.
Edwards, N.C., Jr., *Iceberg research,* Mar. 1984, No.7, p.20-24.
Sea ice distribution, Ice conditions, Surface temperature, Water temperature, Sea water, Forecasting.

39-2531
Remote sensing—from research towards operational use.
International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984, European Space Agency, ESA SP-215, Paris, Aug. 1984, 880p. (2 vols.), Refs. passim. For selected papers see 39-2532 through 39-2546.
Sea ice distribution, Ice conditions, Remote sensing, Ice edge, Microwaves, Radiometry, Snow physics, Ice mechanics.

39-2532
SAR for real-time ice reconnaissance.
Nichols, A., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.71-76.
Ice surveys, Remote sensing, Airborne radar, Measuring instruments, Mapping.

39-2533
Dielectric measurements of soils in the 3-37 GHz band between -50 C and 23 C.
Hallikainen, M., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.163-168, 19 refs.
Soil physics, Dielectric properties, Soil water, Temperature variations, Microwaves, Remote sensing, Unfrozen water content, Water content.

39-2534
Dielectric behavior of snow in the 3-37 GHz range.
Hallikainen, M., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.169-174, 26 refs.
Ulaby, F.T., Abdelrazik, M.
Snow electrical properties, Remote sensing, Microwaves, Dielectric properties, Snow water content.

39-2535
Remote sensing of the marginal ice zone during MIZEX '83.
MIZEX Remote Sensing Group, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.339-346, 15 refs.
Ice conditions, Ice edge, Remote sensing, Sea ice distribution, Ice mechanics, Ice deformation.

39-2536
SAR measurement of sea ice properties during MIZEX '83.
Burns, B.A., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.347-351, 9 refs.
Sea ice distribution, Remote sensing, Airborne radar, Ice edge, Ice floes, Microwaves, Ice mechanics, Ice conditions.

39-2537
Millimeter wave radiometric images of the marginal ice zone.
Hollinger, J.P., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.353-358, 9 refs.
Keller, M.R., Luther, C.A., Ramseier, R.O.
Ice edge, Ice conditions, Ice mechanics, Remote sensing, Radiometry, Measuring instruments, Ice structure.

39-2538
Active microwave measurements of sea ice in the marginal ice under summer conditions.
Onstott, R.G., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.359-363, 5 refs.
Moore, R.K.
Sea ice distribution, Ice edge, Microwaves, Radar echoes, Remote sensing, Seasonal variations, Backscattering.

39-2539
Eddy studies during MIZEX 83 by ship and remote sensing.
Johannessen, O.M., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.365-368, 5 refs.
Sea ice, Ice mechanics, Ocean currents, Remote sensing, Airborne radar, Ice water interface.

39-2540
Mapping the Fram Strait ice edge using AVHRR imagery and NOAA satellite orbital data.
Kloster, K., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.369-372, 3 refs.
Farrelly, B.A.
Ice edge, Remote sensing, Albedo, Mapping, Sea water, Water temperature.

39-2541
Observation of variations in the composition of sea ice in the Greenland MIZ during early summer 1983 with the NIMBUS-7 SMMR.
Gloersen, P., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.373-378, 7 refs.
Campbell, W.J.
Sea ice distribution, Ice conditions, Microwaves, Ice temperature, Ice cracks, Mapping, Radiometry, Freeze thaw cycles, Greenland.

39-2542
Passive microwave characteristics of the Bering Sea ice cover during MIZEX-West.
Cavalieri, D.J., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.379-384, 8 refs.
Gloersen, P., Wilheit, T.T., Calhoon, C.
Sea ice distribution, Microwaves, Ice edge, Ice conditions, Radiometry, Remote sensing, Ice spectroscopy, Bering Sea.

39-2543
Surface based brightness temperatures of sea ice in the Bering and Greenland seas.
Grenfell, T.C., European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.385-389, 6 refs.
Sea ice distribution, Ice edge, Spectra, Microwaves, Radiometry, Ice cover thickness, Brightness, Snow depth, Bering Sea, Greenland Sea.

39-2544
Seasonal ice variation in the Barents Sea obtained from the NIMBUS-7 SMMR observations.
Olaussen, I., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.391-393, 3 refs.
Johannessen, O.M., Svendsen, E.
Sea ice distribution, Ice conditions, Remote sensing, Oceanography, Climatic factors, Seasonal variations, Barents Sea.

39-2545
Distribution of ice concentration. Multiyear and first year fraction in the Arctic Ocean derived from the NIMBUS-7 SMMR observations.
Svendsen, E., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing- from research towards operational use, Paris, Aug. 1984, p.395-397, 2 refs.
Johannessen, O.M., Olaussen, T.
Sea ice distribution, Ice conditions, Remote sensing, Mapping, Seasonal variations, Arctic Ocean.

39-2546
Use of satellites in frost forecasting: SIPHES project.
Caselles, V., et al, European Space Agency, ESA SP-215, International Geoscience and Remote Sensing Symposium (IGARSS '84), Strasbourg, Aug. 27-30, 1984. Proceedings. Remote sensing—from research towards operational use, Paris, Aug. 1984, p.461-465, 28 refs.
Gandia, V., Melià, J.
Frost forecasting, Remote sensing, Spacecraft, Air temperature, Accuracy, Diurnal variations.

39-2547
Numerical simulation of an avalanche encountering a protection wall.
Gonor, A.L., et al, *Fluid dynamics*, Nov.-Dec. 1983 (Pub. May 84), 18(6), p.905-909, Translated from Akademiia nauk SSSR. Izvestiia. Mekhanika zhidkosti i gaza. 11 refs.
Pik-Pichak, E.G.
Avalanche engineering, Avalanche mechanics, Avalanche modeling, Impact strength, Mathematical models.

39-2548
Characteristics of the hydrology of Siberian rivers based on experience in the design and construction of hydroelectric stations.
Gotlib, IA.L., *Hydrotechnical construction*, Feb. 1984 (Pub. Aug.84), 18(2), p.86-90, Translated from Gidrotekhnicheskoe stroitel'stvo. 17 refs.
Hydraulic structures, Electric power, Icebound rivers, Ice breakup, Ice jams, Stream flow, Flow control.

39-2549
Was there a Panarctic ice sheet during the Pleistocene.
Nesis, K.N., *Soviet journal of marine biology*, Nov.-Dec. 1983 (Pub. Sep.84), 9(6), p.300-307, Translated from Biologiia moria. Refs. p.305-307.
Paleoecology, Bibliographies, Ocean environments, Sea ice distribution, Ice shelves, Ice sheets, Glacial rivers, Arctic Ocean, Glacier surges, Climatic changes, Meteorological factors, Paleobotany.

39-2550
Effect of ice surface orientation on intensity of water-to-ice heat transfer under free convection conditions.
Gogolev, E.S., et al, *Journal of engineering physics*, Mar. 1984 (Pub. Sep.84), 46(3), p.321-324, Translated from Inzhenerno-fizicheskii zhurnal. 20 refs.
Krasavin, A.N.
Frost penetration, Ice water interface, Ice surface, Soil water migration, Orientation, Heat transfer, Ground ice, Convection.

39-2551
Numerical solution of the quasistationary axisymmetric Stefan problem.
Vabishchevich, P.N., et al, *Journal of engineering physics*, Mar. 1984 (Pub. Sep.84), 46(3), p.371-376, Translated from Inzhenerno-fizicheskii zhurnal. 20 refs.
Vabishchevich, T.N.
Stefan problem, Phase transformations, Melting, Mathematical models.

39-2552
Transverse mixing characteristics of open and ice-covered channel flows.
Engmann, E.O., Edmonton, University of Alberta, 1974, 267p., Canadian Theses on Microfiche, No.21808, Ph.D. thesis. Refs p.241-243.
Ice cover effect, Turbulent flow, Channels (waterways), Turbulent diffusion, Velocity, Hydraulics, Shear flow, Laboratory techniques, Analysis (mathematics), Tracers.

39-2553
Heat transfer and icing of a rough cylinder.
Makkonen, L., *Cold regions science and technology*, Feb. 1985, 10(2), p.105-116, 9 refs.
Icing rate, Heat transfer, Surface roughness, Boundary layer, Mathematical models.

39-2554
Analysis of floating ice covers with partial flooding.
Kerr, A.D., *Cold regions science and technology*, Feb. 1985, 10(2), p.117-123, 7 refs.
Floating ice, Ice water interface, Static loads, Water level, Flooding, Ice cover, Ice deformation.

39-2555
Empirical relationship between dust content and Arctic snow albedo.
Woo, M., et al, *Cold regions science and technology*, Feb. 1985, 10(2), p.125-132, 21 refs.
Dubreuil, M.A.
Snow optics, Albedo, Snow impurities, Dust, Solar radiation, Snowmelt, Runways, Roads.

39-2556
Laboratory tests of a motorized snow surface hardness gage.
Martinelli, M., Jr., et al, *Cold regions science and technology*, Feb. 1985, 10(2), p.133-140, 8 refs.
Ozment, A.
Snow hardness, Snow strength, Ice strength, Snow surface, Shear stress, Snowdrifts, Loads (forces), Tests.

39-2557
Snow avalanche frequency and velocity for the Kananaskis Valley in the Canadian Rockies.
Johnson, E.A., et al, *Cold regions science and technology*, Feb. 1985, 10(2), p.141-151, 22 refs.
Hogg, L., Carlson, C.S.
Avalanche formation, Avalanche tracks, Snow mechanics, Analysis (mathematics), Time factor, Velocity, Slope orientation, Vegetation, Canada—Alberta—Kananaskis Valley.

39-2558
Development of a snowdrift wind tunnel.
Anno, Y., et al, *Cold regions science and technology*, Feb. 1985, 10(2), p.153-161, 7 refs.
Tomabechi, T.
Snowdrifts, Wind tunnels, Snow accumulation, Laboratory techniques, Models.

39-2559
Iceberg grounding and scouring on the Labrador Continental Shelf.
Woodworth-Lynas, C.M.T., et al, *Cold regions science and technology*, Feb. 1985, 10(2), p.163-186, 23 refs.
Simms, A., Rendell, C.M.
Icebergs, Ice scoring, Drift, Grounded ice, Radar tracking, Offshore structures, Accuracy, Computer programs, Charts, Canada—Labrador.

39-2560
Grain growth and the creep behavior of ice.
Cole, D.M., *Cold regions science and technology*, Feb. 1985, 10(2), MP 1862, p.187-189, 4 refs.
Ice creep, Ice cracks, Ice formation, Grain size, Rheology, Ice growth, Strains, Tests.

39-2561
Froude number paradoxes in the modeling of a snowdrift.
Anno, Y., *Cold regions science and technology*, Feb. 1985, 10(2), p.191-192, 2 refs.
Snowdrifts, Grain size, Snow mechanics, Models, Particles, Wind velocity.

39-2562
Supplement to Anno's modelling conditions for a snowdrift.
Anno, Y., *Cold regions science and technology*, Feb. 1985, 10(2), p.193-195, 3 refs.
Snowdrifts, Snow accumulation, Friction, Snow mechanics, Surface roughness, Wind velocity, Models, Particles.

39-2563
Technique for observing freezing fronts.
Colbeck, S.C., *Soil science*, Jan. 1985, 139(1), MP 1861, p.13-20, 8 refs.
Ice water interface, Freezing, Ice formation, Soil freezing, Ice lenses, Tests.

On the basis of observations of freezing fronts and liquid inclusions in liquid-saturated glass beads, a simple technique is described for making these direct observations. The ice-water interface at the freezing front was concave when viewed from the ice side, because the glass beads were preferentially wetted by the liquid. The size and number of liquid inclusions decreased with distance behind the freezing front. More liquid is trapped by smaller glass beads. The liquid inclusions are probably enriched in soluble impurities. No tendency for pressure buildup or ice lense formation was observed, perhaps because large particles were used. It is very important to extend these observations to other conditions, especially to smaller particle sizes.

39-2564
Studies of transitional forms between snowpatch and glacier in the Abisko Mountains, Swedish Lappland.
Lindh, L., *Svensk geografisk årsbok*, 1984, No.60, p.145-156, 14 refs.
Snow ice interface, Glacier ice, Cirque glaciers, Moraines, Transformations, Sweden—Abisko Mountains.

39-2565
Recent changes of some glaciers of East Svartisen, Norway.
Knudsen, N.T., et al, *Geografiska annaler. Series A Physical geography*, 1984, 66A(4), p.367-380, 25 refs.
Theakstone, W.H.
Glacier oscillation, Glacier thickness, Photogrammetry, Aerial surveys, Glacier surfaces, Norway—Svartisen.

39-2566
Role of the ice contributing area in the morphology of transverse fjords, British Columbia.
Roberts, M.C., et al, *Geografiska annaler. Series A Physical geography*, 1984, 66A(4), p.381-393, 44 refs.
Rood, K.M.
Glacier alimentation, Geomorphology, Landforms, Ice accretion, Abrasion, Slope orientation, Coastal topographic features.

39-2567
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Proudfoot, D.N., et al, [1982], 159p., Refs. p.155-159.
May, R.W., Rutter, N.W., Shaw, J.
Glacier surveys, Glacier flow, Glacial lakes, Lacustrine deposits, Moraines, Glacier beds, Velocity, Manuals, Sedimentation, Canada—Alberta.

39-2568
Sensitivity and response time of natural systems to climatic change in the Late Quaternary.
Wright, H.E., Jr., *Quaternary science reviews*, 1984, Vol.3, p.91-131, Refs. p.127-131.
Climatic changes, Ice sheets, Oxygen isotopes, Paleoclimatology, Pleistocene, Glacier flow, Quaternary deposits, Bottom sediment, Glaciology, Stratigraphy, Ecology.

39-2569
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Calgary. University. Faculty of Physical Education. Outdoor Pursuit Program, Canadian outdoor survival, Series 1, Calgary, Alta, University, 1984, 40p. + 80 slides.
Shelters, Snow houses, Cold weather survival.

39-2570
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Potter, N., Jr., *Journal of geological education*, Sept. 1984, 32(4), p.226-232, Refs. p.230-232.
Avalanches, Geomorphology, Glacial geology, Geocryology, Permafrost, Periglacial processes, Rock glaciers, Pingos, Patterned ground.

39-2571
Geology and seismicity of the BAM zone (from Lake Baykal to the Tynda River). Hydrogeology. [Geologiia i seismichnost' zony BAM (ot Baikala do Tyndy). Gidrogeologiia],
Pinneker, E.V., et al, Novosibirsk, Nauka, 1984, 167p., In Russian with English table of contents enclosed. Refs. p.162-166.
Earthquakes, Permafrost beneath structures, Permafrost hydrology, Baykal Amur railroad, Naleds, Permafrost distribution, Ground ice, Active layer, Seasonal freeze thaw, Permafrost structure, Ground water, Hydrogeology, Geocryology.

39-2572
Technological strength of welded joints at low temperatures. [Tekhnologicheskaia prochnost' svarnykh soedinenii pri nizkikh temperaturakh],
Sleptsov, O.I., Novosibirsk, Nauka, 1984, 102p., In Russian with English table of contents enclosed. 207 refs.
Brittleness, Steel structures, Crack propagation, Welding, Joints (junctions), Frost action, Air temperature, Cracking (fracturing), Cold weather construction.

39-2573
Vegetation of western Siberia and its mapping. [Rastitel'nost' Zapadnoi Sibiri i ee kartografirovanie],
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Tundra, Plant ecology, Taiga, Ecosystems, Swamps, River basins, Valleys, Mapping, Vegetation patterns, Biomass, Classifications, Cryogenic soils.

39-2574
Basic results and prospects of cartographic and geobotanical studies in western Siberia. [Osnovnye itogi i perspektivy kartografo-geobotanicheskikh issledovanii v Zapadnoi Sibiri],
Belov, A.V., et al, Rastitel'nost' Zapadnoi Sibiri i ee kartografirovanie (Vegetation of western Siberia and its mapping) edited by A.V. Belov, Novosibirsk, Nauka, 1984, p.3-6, In Russian.
Druzhinina, N.P., Il'ina, I.S.
Taiga, Mapping, Natural resources, Tundra, Surveys, Vegetation patterns, Economic development, Research projects, Permafrost distribution, Geobotanical interpretation, Petroleum industry, Forestry, Mining.

39-2575
Zonal subdivision of tundra vegetation in the West Siberian Plain. [Zonal'noe delenie rastitel'nosti tundr Zapadno-Sibirskoi ravniny],
Mel'tser, L.I., Rastitel'nost' Zapadnoi Sibiri i ee kartografirovanie (Vegetation of western Siberia and its mapping) edited by A.V. Belov, Novosibirsk, Nauka, 1984, p.7-19, In Russian. 34 refs.
Tundra, Plant ecology, Ecosystems, Vegetation patterns, Mapping, Swamps, Bibliographies, Classifications, River basins, Valleys.

39-2576
Dark conifer forests of the West Siberian Plain. [Temnokhvoinye lesa Zapadno-Sibirskoi ravniny],
Il'ina, I.S., Rastitel'nost' Zapadnoi Sibiri i ee kartografirovanie (Vegetation of western Siberia and its mapping) edited by A.V. Belov, Novosibirsk, Nauka, 1984, p.19-50, In Russian. 59 refs.
Maps, Swamps, Taiga, Forest soils, Cryogenic soils, Polar regions, Plant ecology, Classifications, Ecosystems.

39-2577
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Druzhinina, N.P., et al, Rastitel'nost' Zapadnoi Sibiri i ee kartografirovanie (Vegetation of western Siberia and its mapping) edited by A.V. Belov, Novosibirsk, Nauka, 1984, p.50-76, In Russian. 43 refs.
Sokolova, L.P.
River basins, Plant ecology, Vegetation patterns, Valleys, Ecosystems, Cryogenic soils, Biomass, Land reclamation, Floodplains, Bibliographies, Frost penetration.

39-2578
Structure of phytocenoses of oligotrophic sphagnum bogs and its relation to moisture supply. [Struktura fitotsenozov oligotrofnykh sfagnovykh bolot i ee sviaz' s usloviiami uvlazhneniia],
Kustova, N.V., Rastitel'nost' Zapadnoi Sibiri i ee kartografirovanie (Vegetation of western Siberia and its mapping) edited by A.V. Belov, Novosibirsk, Nauka, 1984, p.76-106, In Russian. 27 refs.
Swamps, Podsol, Taiga, Vegetation patterns, Forest soils, Plant ecology, Ecosystems, Floodplains, Frost penetration, Cryogenic soils, USSR—Irtysh River.

39-2579
Quantitative method of analyzing geobotanical descriptions of taiga for large-scale mapping (the Atlymskiy interfluve area taken as an example). [Kolichestvennyi metod analiza geobotanicheskikh opisanii taezhnot territorii dlia krupnomasshtabnogo kartografirovaniia (na primere Atlymskogo vodorazdela)],
Kobeleva, N.V., Rastitel'nost' Zapadnoi Sibiri i ee kartografirovanie (Vegetation of western Siberia and its mapping) edited by A.V. Belov, Novosibirsk, Nauka, 1984, p.106-119, In Russian. 12 refs.
Taiga, Mapping, Vegetation patterns, Surveys, Plant ecology, Geobotanical interpretation, Ecosystems, Classifications.

39-2580
Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries. [Tezisy dokladov],
Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984, Salaspils, 1984, 136p., In Russian. For selected summaries see 39-2581 through 39-2590. Refs. passim.
Zalitis, P.P., ed
Soil erosion, Revegetation, Land reclamation, Ecosystems, Forest land, [illegible], Biomass, Peat, Paludification, Organic soils, Systems analysis, Drainage, Freeze thaw cycles, Mathematical models, Classifications.

39-2581
Models simulating raised bogs. [Imitatsionnye modeli verkhovykh bolot],
Sviazhev, Iu.M., et al, Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.6-11, In Russian. 5 refs.
Aleksandrov, G.A.
Paludification, Swamps, Ecosystems, Nutrient cycle, Drainage, Water table, Thermal regime, Models.

39-2582
Systems approach and mathematical modeling of forest ecosystems. [Sistemnyi podkhod i matematicheskoe modelirovanie lesnoi ekosistemy],
Atroshchenko, O.A., Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.18-22, In Russian. 3 refs.
Forest land, Ecosystems, Forestry, Systems analysis, Maintenance, Mathematical models, Revegetation.

39-2583
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Ivanov, K.E., Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.30-35, In Russian. 6 refs.
Swamps, Ecosystems, Plant ecology, Nutrient cycle, Microrelief, Slope orientation, Mathematical models.

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Bush, K.K., Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.36-38, In Russian.
Forest land, Paludification, Land reclamation, Forest soils, Peat, Organic soils, Drainage, Ecosystems, Classifications.

39-2585
Modeling the growth and maintenance-cutting of drained stands. [K modelirovaniiu rosta i rubok osushennykh drevostoev],
Konstantinov, V.K., Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.56-61, In Russian. 10 refs.
Land reclamation, Paludification, Forest soils, Soil erosion, Drainage, Forestry, Revegetation, Biomass.

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Glebov, F.Z., et al, Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.73-77, In Russian. 2 refs.
Korzukhin, M.D.
Taiga, Paludification, Ecosystems, Land reclamation, Peat, Biomass, Mathematical models.

39-2587
Mathematical modeling in calculations of hydrothermal regimes of hummocky bogs. [Primenenie matematicheskogo modelirovaniia pri raschete vodno-teplovogo rezhima bugristykh bolot],
Moskvin, IU.P., et al, Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.78-83, In Russian. 4 refs.
Novikov, S.M.
Paludification, Swamps, Drainage, Freeze thaw cycles, Soil temperature, Hydrothermal processes.

39-2588
Using different modeling techniques in studying water regime of raised bogs. [Primenenie metodov modelirovaniia dlia izucheniia vodnogo rezhima verkhovykh bolot],
Rusetskas, IU.IU., Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.90-95, In Russian. 11 refs.
Swamps, Ecosystems, Hydrothermal processes, Vegetation patterns, Trees (plants), Grasses, Mosses, Biomass, Classifications, Models.

39-2589
Statistical models of evaporation processes in forest biogeocenoses. [Postroenie statisticheskoi modeli protsessa isparenia pochvoi v lesnykh biogeotsenozakh],
Belotserkovskaia, O.A., et al, Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.96-99, In Russian. 12 refs.
Andreichik, M.F.
Forest land, Forest soils, Seasonal freeze thaw, Soil temperature, Heat balance, Evaporation, Statistical analysis, Simulation.

39-2590
Modeling water regime of peat soils in drained forests. [Modelirovanie vodnogo rezhima osushennykh lesov na torfianykh pochvakh],
Shits, IU.E., Simpozium po ispol'zovaniiu matematicheskogo modelirovaniia v ekologicheskikh issledovaniiakh lesov i bolot, Aug. 21-23, 1984. Tezisy dokladov (Symposium on the use of mathematical modeling in ecological investigations of forests and swamps, Aug. 21-23, 1984. Summaries) edited by P.P. Zalitis, Salaspils, 1984, p.116-120, In Russian. 7 refs.
Forest soils, Taiga, Paludification, Peat, Organic soils, Evaporation, Heat transfer, Mass transfer, Drainage, Mathematical models.

39-2591
Proceedings.
Symposium on Antarctic Logistics, 3rd, Leningrad, 1982, Scientific Committee on Antarctic Research, [1983], 634p. in 3 vols., Refs. passim. For individual papers see: 36-2355, 36-2356, 37-2189, 37-2384, 39-1683, 39-2246, and 39-2591 through 39-2632, or 12G-25957, 12G-25958, 13G-26561, 13G-27716, 13G-27758, 14G-31175, 14G-31381, and 14G-31513 through 14G-31566.
Logistics, Meetings, Cold weather operation, Transportation, Utilities.
The papers are published in an essentially unedited format and arranged in seven categories: publications, telecommunications, transport, buildings and services, energy, soil contamination, and field operations, equipment, and clothing. Most are full papers as presented, but some are abstracts or somewhat extended abstracts. Within the categories they cover, among other topics: transmitter stations, automatic weather sensing stations, ice piers, air navigation, sledges, runway construction, sea ice variations, rebuilding antarctic stations, desalination systems, wind power utilization, oil pollution, medical services, a diving program, ice coring, and field equipment.

39-2592
Operational weather forecasting using weather satellite imagery in Antarctica.
Foster, M.S., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.21-24.
Spaceborne photography, Weather forecasting, Antarctica—McMurdo Station.
The weather satellite imagery system is described, its capabilities and applications are enumerated, and its necessity in weather-data-sparse locations such as Antarctica is emphasized. Data gathered at McMurdo from polar orbiting weather satellites has enhanced the ability to provide accurate forecasts in support of the antarctic science programs.

39-2593
Complementation and movement of the transmitter station in support of meteorology.
Carvajal, E.M., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.30-38.
Telecommunication, Meteorology, Radio communication, Antarctica—Fildes Peninsula.
Upgrading of the Chilean meteorological telecommunications system on Ardley and King George Islands in the Shetland Islands is described. Selection and preparation of the site on the Fildes Peninsula, transporting the equipment, and providing electric power are discussed. Diagrams showing general locations, antenna configuration and microwave link, locations of generators and transmitters, hut supports, and transport methods are included.

39-2594
Deployment of satellite automatic weather sensing stations in the Antarctic Peninsula: logistic problems and solutions.
Araya F., M., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.39-68.
Rojas, J.R., Vasquez P., P.
Remote sensing, Weather stations, Spacecraft, Data transmission, Logistics, Antarctica—Antarctic Peninsula.
A review is given of the Chilean experience in the deployment and data collection activities of remote automatic weather sensing stations. With the advent of satellites, these deployed stations can be monitored by and their data transmitted to the polar orbiting NASA and NOAA spacecraft for retransmission to ground stations on the Antarctic Peninsula. Communications equipment used and its installation at the Chilean stations are described. Photographs and diagrams are included.

39-2595
Antarctic telecommunications: a brief history and the situation today.
Thomson, R.B., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.69-76.
Telecommunication, Radio communication, Meteorological data, Data transmission.
Using the IGY as a start point, the status of meteorological communications to, from, and within Antarctica is reviewed. Most of the discussion centers on recommendations made by participants at Antarctic Treaty Consultative Meetings (10th, 11th, and 12th), goals established in the terms of reference for the Working Group on Logistics Telecommunications Sub-committee, and discussions of other international organization. The consensus is that the system stands in need of substantial improvement and several ways/methods are suggested to enhance the flow of meteorological information.

39-2596
Review of Australian antarctic logistics field programs and equipment.
Holmes, I.E.B., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.78-85, 6 refs.
Tracked vehicles, Cold weather performance, Maintenance, Logistics.
Inland field traverses are conducted from Mawson and Casey Stations to support Antarctic scientific field programs. Developments in traverse equipment since 1968 and experience gained with some equipment in field use over the past fifteen years are described. Tracked carriers have potential for offering greater flexibility when used in support of tractor trains; however, vehicles tested in the field so far have not given reliable service. (Auth.)

39-2597
Natural ice piers.
Dubrovin, L.I., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.86-88, 2 refs.
Ice (construction material), Ice wharves, Sea ice, Fast ice.
Dimensional and other characteristics of suitable unloading piers are given and various kinds of natural antarctic piers are discussed: floating ice, shelf ice, rocky cliffs, persistent snowbanks. Factors which should be considered when contemplating the use of the available types are pointed out. Shoreline changes, retreat of ice edges, water temperature, thermal abrasion of ice shores, tidal, wave, and swell effects are among these significant natural processes which must be recognized.

39-2598
Scientific/operational support to the Soviet Antarctic Expedition studies.
Romanov, A.A., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.89-93
Weather forecasting, Sea ice, Meteorological instruments, Ice forecasting, Ocean waves, Antarctica—Molodezhnaya Station.
The Antarctic Meteorological Center (AMC) at Molodezhnaya has substantial responsibilities for gathering environmental data and preparing forecasts of these natural phenomena. Severe weather in high latitudes, the sea ice, and stormy seas all present hazardous or extremely hazardous conditions for man so that advance warning of these conditions is a necessity for survival. The equipment, capabilities, procedures, and schedules of the AMC to meet its responsibilities are described. The use of computers and satellite imagery has improved the timeliness and accuracy of the products of the Center for use by field scientists, research and logistics vessels, aircraft operations, and traverses.

39-2599
Marine transport operations of the Soviet Antarctic Expeditions (SAE) in 1971-1981.
Kozlovskii, A.M., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.94-98.
Logistics, Marine transportation, Cargo, Ships.
A brief review is given of the vessels which participated in the SAE during the period. Sizes, types, cargo and passenger capacities, speeds, ranges, bunker capacities, and displacements are given for the *Ob', Michael Somov, Professor Vise,* and *Elbrus*. Their methods of operation are described as they remanned and resupplied the Russian antarctic stations, Molodezhnaya, Mirny, Russkaya, Novolazarevskaya, Bellingshausen, and Leningradskaya.

39-2600
Air navigation support for scheduled flights of IL-18 aeroplanes to Molodezhnaya Station.
Aver'ianov, V.G., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.99-105.
Klokov, V.D., Alekhin, A.N.
Cold weather construction, Runways, Snow (construction material), Snow strength, Antarctica—Molodezhnaya Station.
A detailed description is given of the construction of the snow runway at Molodezhnaya Station in 1980. During the preconstruction phase three major technical problems had to be resolved: understanding of the mass-energy exchange on the ice and in the snow-firn, increasing the bearing capacity of the snow, development of working techniques for the construction phase. When these had been resolved a runway suitable for IL-18 operations into the station was realized.

39-2601
Ground transportation at the antarctic stations of the F.R.G.
Kohnen, H., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.106-114.
Snow vehicles, Tracked vehicles.
Emphasis is centered on two types of snow cutter and a snow mobile which are specially designed for scientific support and logistics tasks at antarctic stations. Details of size, operation, and capacities of these vehicles are given.

39-2602
RV *Polarstern*: Polar research and supply vessel of the F.R.G.
Bungenstock, H., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.115-118.
Hempel, G.
Ships, Oceanographic ships, Logistics, Icebreakers.
Details are given of the need by the GDR for an antarctic research vessel and the processes through which the ship came to be built, launched, and put into service. Cargo and personnel capacities are shown; on board research equipment is noted; ice navigation capability is stated; and the provisional schedule and vessel costs are given.

39-2603
Japanese icebreaker *Shirase*.
Kusunoki, K., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.119-126.
Ships, Icebreakers, Oceanographic ships, Logistics.
In April 1979 the Japanese Government decided to build a new icebreaker (Arctic Class 4) to replace the icebreaker *Fuji* which was built in 1965. The new ship *Shirase* will carry personnel, cargo, helicopters, and provide for onboard observations. The standard displacement is 11,000 tons, and the propulsion capacity of 30,000 SHP is provided by six sets of generators and motors which drive three propellers through three shafts. Accommodation for 60 scientists plus 170 crew and capacity for a cargo of 1,000 tons are provided. Laboratories for the onboard research of upper atmosphere physics, oceanography, biology, geosciences and gravimetry and a data processing room are also provided. She will be commissioned in the 1983/84 season. (Auth.)

39-2604
Use of small air-cushion-vehicle (MV-PPO5A) at *Syowa* Station.
Moriwaki, K., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.127-128.
Kusunoki, K.
Air cushion vehicles, Cold weather performance.
Design details of the vehicle are listed and its record of performance from Dec. 1981 to Feb. 1982 is given. The cold weather performance of the vehicle is given for tests on flat sea ice, obstacle crossing, low temperature, and suitability for use over rugged surfaces.

39-2605
SANAE off road equipment vehicle.
Nel, J.G., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.129-130.
All terrain vehicles, Cold weather performance.
Pertinent details of a tracked vehicle construction are given and the SANAE driving experience with it in Antarctica is reported.

39-2606
Vehicles used by the S.A.N.A.E.
Nel, J.G., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.132-136.
Snow vehicles, Tracked vehicles, Amphibious vehicles, Tractors.
At SANAE Station the vehicles used are classed as light, medium, or hauling transport. Specific vehicles in each category are identified, described, and their performances assessed.

39-2607
MV *S.A. Agulhas*.
Leith, B., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.137-139.
Ships, Oceanographic ships, Logistics.
The ship is described as to size, crew complement, passenger and cargo capacities, science laboratories, accommodations and facilities, helicopter operations, navigation equipment, radio communications, and polar operations capabilities.

39-2608
Helicopter operations S.A.N.A.E.
Dean, R.A., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.140-141.
Helicopters, Safety.
Helicopter operations for SANAE date from Dec/Jan 1980/81. 2 Puma SA330 civilian class helicopters are in use, flying from *SA Agulhas* to SANAE Station. The author strongly warns of the sudden onset of hazardous weather typical of the Antarctic and emphasizes the measures taken to ensure the integrity of flying safety.

39-2609
C130 and DHC5 air drops in Antarctica.
Carvajal, E.M., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.142-143.
Logistics, Antarctica—Adelaide Island.
Air operations in support of the Chilean station on the eastern side of Adelaide Island just south of the Antarctic Circle are briefly described. Types of aircraft involved and the materiel transported are noted and details of air drop procedures are included.

39-2610
Runway at Rodolfo Marsh Martin Station.
Carvajal, E.M., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.144-155.
Cold weather construction, Site surveys, Runways, Buildings.
Details are given of the site selection and construction of the airfield on Fildes Peninsula on King George Island. The complex is composed of the runway, hangar, and the air terminal and guest house. The runway, oriented ESE-WNW (110-290), is 1,305 m long with expansion capability to 1,600 m if necessary. Radio navigational aids include radio beacon, VOR/DME, and radio beacon finder. Diagrams are included of the air approach patterns using these aids. Sketches are also included of the other airfield facilities.

39-2611
Preliminary studies for the project of a landing strip at Capitan Arturo Prat Base, Greenwich Island.
Alarcon, B., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.156-194, 6 refs.
Marangunic, C., Villanueva, V.
Cold weather construction, Aircraft landing areas, Geologic structures, Site surveys, Antarctica—Greenwich Island.
This paper shows the preliminary work and geotechnical studies for the design and development of an airstrip in support of Chilean antarctic research. Geotechnical studies show a favorable terrain formed by terraces and littoral berms, with a minor proportion of intermediate to basaltic andesite rocks. Complementary analysis of photointerpretation was made on aerial photographs obtained in February 1980. By conventional aerophotogrammetric methods, the necessary information was obtained for the design of the runway. The scale 1:4,000 allowed conforming to technical specifications for airport Code C-D, according to norms Annex 14 OACI. In the field an axis of 1,230 m was staked off with sufficient room for lengthening to 1,430 m. Complementary studies of the mechanics of ice resistance for skiways were also made. (Auth. mod.)

39-2612
Investigation of the sea-ice variation in the Weddell Sea during the summer navigation period by use of APT-weather pictures.
Glode, P., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.195-199.
Gernandt, H., Drescher, K.
Sea ice distribution, Ice breakup, Spaceborne photography, Weddell Sea.
Analysis of APT weather pictures taken at the GDR laboratory at Novolazarevskaya Station since 1975 indicates that the sea ice extent of the Weddell Sea at the end of winter has increased remarkably since 1975, but the annual decay with a steepest decrease of sea ice extent in December finally opens the approach to the south coast of the Weddell Sea in December or January independently of sea ice extent at springtime. Some other features of sea ice variation are reported e.g. the split of the ice cover of the Weddell Sea into a western part never decaying entirely and an eastern field mostly splitting into smaller patches and decaying before the end of the season. (Auth.)

39-2613
Motorized toboggans.
Clark, N., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.200-205.
Snow vehicles, Sleds, Logistics, Cold weather performance.
The New Zealand experience with this type vehicle is described and an evaluation of the types used is given. During the period from 1969-1974 the three toboggan types used were: Sno-trac (Sweden); OMC Snow Cruiser B (Canada), and Rupp 440 Snowmobile (U.S). These are compared and performance assessments are given.

39-2614
Movement of resupply cargo to Scott Base by container.
Clark, N., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.206-207.
Ships, Cargo, Antarctica—Scott Station.
The shift by New Zealand to container shipment of cargo for antarctic resupply has produced outstanding results in reducing shipping and handling costs, in nearly eliminating damaged goods, increasing security of the materiel, and in presenting incoming wintering parties with goods ready for use, in the order to be used.

39-2615
Sledges.
Clark, N., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.208-209.
Sediments, Dredging, Sleds, Portable shelters, Antarctica—McMurdo Sound.
In a program to collect sediment samples from the floor of McMurdo Sound, New Zealand teams were often halted or delayed by intimidating weather. Since the operation involved setting up a drilling rig over a hole in the ice, it was suggested that a Wanigan mounted on a sled would let operators work protected from the wind and cold. A steel sledge with skis was built and used. Logistical difficulties are mentioned.

39-2616
Rebuilding of Australia's 3 antarctic stations, Parts 1-3.
Gosbell, K.B., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.214-273.
Holmes, I.E.B.
Cold weather construction, Buildings, Utilities, Site surveys, Antarctica—Mawson Station, Antarctica—Davis Station, Antarctica—Casey Station.
A rebuilding program to redevelop the Mawson, Davis and Casey stations is presented in three parts. Basic requirements are outlined, and the underlying concepts behind the master planning of each station are described, in part one. The building system is covered in part two, and the engineering services in part three. Details of the new construction are given along with the rationale for building placement on the sites taking into consideration prevailing wind direction, snow drifting, protection of personnel and buildings against 100-k winds. Differences in construction between the stations are pointed out. Problem areas in the earlier construction are rectified in the plans for the new buildings. Comparisons between the old and the new are facilitated by the photographs included.

39-2617
Support of construction activities during rebuilding of Australia's antarctic stations.
Holmes, I.E.B., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.274-279, 2 refs.
Construction equipment, Cold weather construction, Buildings, Electric power, Antarctica—Casey Station, Antarctica—Davis Station, Antarctica—Mawson Station.
Australia's three Antarctic stations are being redeveloped to provide more permanent accommodation. The new buildings and associated facilities require provision of plant and equipment and temporary accommodation and services to facilitate on-site construction work. Equipment has been selected to enable all activities to be completed as scheduled. (Auth.)

39-2618
Concreting practices at Australian antarctic stations.
McEwan, R., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.280-287, 4 refs.
Gosbell, K.
Cold weather construction, Buildings, Concrete aggregates, Concrete admixtures, Antarctica.
This paper describes the successful techniques now being used to ensure the production of sound concrete structures in Antarctica. (Auth.)

39-2619
Modular ISO sea container caravan for antarctic use.
Holmes, I.E.B., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.303-307, 1 ref.
Traverses, Equipment, Transportation.
Modified ISO 20 tonne sea containers have been used as a basic module for traverse caravans. The containers have been fitted out as either living vans or powerhouse workshop vans, and mounted on Otaco 10 tonne Powerhaul sledges. The modules provide flexible accommodation units for other uses including field camps and temporary station accommodation. (Auth.)

39-2620
New design concept for Halley Station.
Smith, A., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.316-325.
Heating, Buildings, Materials, Ventilation, Water supply, Electric power, Waste disposal, Cold weather construction, Antarctica—Halley Station.
The original buildings at Halley Station, and those built subsequently and progressively buried and crushed by accumulating snow, are described. A new design concept, born from the experience gained, is presented, consisting of four interconnecting cylinders offering two-storey accommodation for 18 individuals and with a life expectancy of 15 years. The systems providing such services as power generation, heating, ventilation, toilet facilities and fire detection, are described.

39-2621
Construction and reconstruction of scientific stations in the Antarctic.
Korotkevich, E.S., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.326-337.
Efremenko, V.N., Shirshov, V.E.
Materials, Modular construction, Cold weather construction, Buildings, Antarctica—Molodezhnaya Station.
The original buildings at USSR stations in Antarctica, and the shortcomings of those built subsequently, are described. The construction problems were solved when the utilization of modular houses was initiated. The elements and procedures involved in such construction are described in detail, and the buildings are illustrated. Descriptions of units at Molodezhnaya Station, and other permanent and temporary Soviet constructions in Antarctica, are provided.

39-2622
Technical concepts of the antarctic stations Georg-Von-Neumayer and Filchner of the Federal Republic of Germany.
Mannhardt, S., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.338-347.
Heating, Materials, Ventilation, Water supply, Electric power, Waste disposal, Cold weather construction, Buildings, Utilities, Antarctica—Georg von Neumayer Station, Antarctica—Filchner Station.
The design of the Georg-Von-Neumayer Station provided for container-type buildings, which are protected against direct climatic effects by tubes consisting of corrugated steel sheets. The two tubes, of which the station consists, are described and the layout is illustrated. Described are also the systems providing such services as power and energy, heating, ventilation, water supply and refuse disposal. The communication equipment is listed, as are safety concepts and installations. At the Filchner Station, seven 20-foot Isonorm containers have been built on a steel structure, consisting of a 25-ton grid pillared platform, as living and research facilities for 15 persons, as were two 10-foot containers for energy supply and snow melting plant.

39-2623
Floor-elevated summer quarters at Syowa Station.
Hannuki, T., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.348-353.
Kusunoki, K.
Materials, Cold weather construction, Buildings, Antarctica—Showa Station.
The design and construction of a floor-elevated two-story building, as summer sleeping quarters at Showa Station, are described. To control snow deposition, the building was constructed on reinforced concrete pillars, with prefabricated wooden panels supported by steel skeletons. The prefabricated elements were made in Japan from July 1978 to March 1979. Since the building materials were to be transported by helicopter, their maximum length was less than 5 m, which corresponds to the size of the fuselage. (Auth. mod.)

39-2624
Laboratory base for geophysical observations.
Gernandt, H., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.354-358.
Tripphahn, B.
Buildings, Site surveys, Laboratories, Cold weather construction, Antarctica—Schirmacher Ponds.
The construction material and procedure for a German laboratory base at Schirmacher Ponds, consisting of 20-foot transport containers, covering an area of 120 sq m, and offering housing for six persons, are described. The advantages of the container system are summarized, showing the containers to be easy to unload, transport over snow and ice, assemble and expand. The scientific programs carried out at the laboratory base, and its expansion, are discussed.

39-2625
Main considerations about the future use of more practical, safe and comfortable Chilean antarctic bases and refuges.
Araya F., M., et al, Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.366-381, 4 refs.
Vasquez P., P., Rojas, J.R.
Heating, Water supply, Waste disposal, Cold weather construction, Buildings, Materials.
Current and future problems related to fire prevention, sanitation, water supply, energy conservation, and accomodations on Chilean bases and refuges in the Antarctic are identified, and solutions are offered. The most advanced project discussed related to the use of portable refuges made of reinforced plastic.

39-2626
Fire equipment—sprinkler system.
Varcoe, G., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.382-384.
Cold weather construction, Fires, Safety, Equipment, Antarctica—Scott Station.
Fire continues to represent a major hazard to those living and working in Antarctica. Within the design concept of the new Scott Base building program, provision has been made for the installation of a series of compact, self contained, sprinkler units to each individual building within the complex. This paper describes the innovative, but effective sprinkler system. (Auth.)

39-2627
Scott Base rebuilding programme.
Varcoe, G., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.399-405.
Utilities, Materials, Cold weather construction, Buildings.
Due to recognition of the need to replace the original buildings with a larger, more modern complex, embodying new technologies and facilities necessary to the efficient running of a continuously manned station, reconstruction of Scott Base was commenced in 1976 and is scheduled for completion in the mid 1980s. The new base will provide a living and work area of 2,018 sq. meters, which is approximately three times the size of the original base. Against a background of valuable experience gained from operating and maintaining the original base over a period of twenty years, this paper describes the staged development of the new base rebuilding program. (Auth. mod.)

39-2628
Oil pollution in the Antarctic.
Thomson, R.B., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.523-535, Refs. p.527-535. This is a reading list on effects of oil pollution on a marine polar environment.
Oil spills, Water pollution.
Future activities connected with antarctic mineral resource exploration and exploitation, and their likely impact on the environment, are considered. They include the need for a base on nearby land from which to support off-shore operations which, in turn, would require ship mooring facilities, workshops, large generators and heating systems, and a large number of people. It is suggested that a great deal can be learned on the subject from literature available from experience in the Arctic, and a reading list to this effect is provided. Answers to some of the questions concerning oil pollution, directed by Antarctic Treaty governments to SCAR, are provided in the Report of the XIth Antarctic Treaty Consultative Meeting, which is partly reproduced here.

39-2629
Notes on field equipment used by the New Zealand Antarctic Research Programme.
Monteath, C., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.552-556.
Sleds, Shelters, Portable equipment.
The modification and improvement of Nansen wooden dog sledge is discussed in the light of a preference for this vehicle over metal or fiberglass motor toboggan sledges. A description of Maudheim and Tamworth cargo sledges, polar tents, auxiliary tents, and field food ration boxes, with a list of their contents, is also provided.

39-2630
Development of mobile field units by British Antarctic Survey.
Chinn, E.J., Symposium on Antarctic Logistics, 3rd, Leningrad, 1982. Proceedings, Scientific Committee on Antarctic Research, [1983], p.557-572.
Shelters, Snow vehicles, Portable equipment.
This paper describes the equipment, facilities and procedures used by the British Antarctic Survey, to help improve the efficiency of men undertaking scientific programs in the field. It covers skiddos, sledges, tents, rations, clothing, sleeping bags, field communications, and field medical equipment. Three annexes are included, one itemizing sledge ration boxes for 20 man/day as per 1982 specification, the second giving details of the field clothing described as worn from the body outwards, and the third providing specifications of down/fibre pile sleeping bags.

39-2631
Results of and future prospects for the development of ice core drilling equipment and technology.
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Plant ecology, Plant physiology, Photosynthesis, Arctic landscapes, Transpiration.

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Meadow soils, Continuous permafrost, Plant ecology, Cryogenic soils, Ecosystems, USSR—Bol'shezemel'skaya Tundra.

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Plant ecology, Plant physiology, Polar regions, Photosynthesis, Nutrient cycle, Transpiration.

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Vegetation, Plant ecology, Plant physiology, Polar regions, Nutrient cycle.

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Tundra, Plant ecology, Cryogenic soils, Plant physiology, Ecosystems, Meadow soils, Vegetation, Continuous permafrost, Acclimatization.

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Plant ecology, Plant physiology, Transpiration, Acclimatization, Arctic landscapes.

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Introduced plants, Revegetation, Acclimatization, Polar regions.

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Tundra, Cryogenic soils, Plant ecology, Plant physiology, Acclimatization, *Continuous permafrost.*

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Vegetation, Plant ecology, Alpine landscapes, Plant physiology, Photosynthesis.

39-2651
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Lichens, Cryobiology, Acclimatization.
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Ecosystems, Vegetation patterns, Polar regions, Plant ecology, Plant physiology, Arctic landscapes.

39-2653
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Bubolo, L.S.
Introduced plants, Acclimatization, Plant ecology, Plant physiology.

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Tundra, Bacteria, Cryogenic soils, Soil microbiology, Polar regions, Nutrient cycle, Acclimatization, Arctic landscapes.

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Tundra, Lichens, Plant ecology, Plant physiology.

39-2656
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Alpine tundra, Nivation, Lichens, Acclimatization.

39-2657
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Plant ecology, Acclimatization, Plant physiology, Arctic landscapes.

39-2658
Temperature regime and photosynthetic apparatus of Arctic tundra plants. [Temperaturnyĭ rezhim i fotosinteticheskiĭ apparat rastenĭ arkticheskoĭ tundry],
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Vas'kovskiĭ, M.D., Barinov, M.G.
Alpine tundra, Arctic landscapes, Vegetation, Acclimatization, Plant ecology, Ecosystems, Soil temperature, Plant physiology, Photosynthesis.

39-2659
Variations of ecological parameters and competitive relationships of Chukotka tundra plants in relation to latitudinal gradient. [Izmeneniia ekologicheskikh parametrov i konkurentnykh otnosheniĭ rasteniĭ chukotskoĭ tundry v zavisimosti ot shirotnogo gradienta],
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Tundra, Acclimatization, Ecosystems, Vegetation patterns, Cryogenic soils, Plant ecology, Soil temperature, Soil chemistry, Plant physiology, USSR—Chukotskiy Peninsula.

39-2660
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Plant physiology, Acclimatization, Frost resistance, Subarctic landscapes, Plant ecology.

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Frei, T.E.-A.
Plant ecology, Ecosystems, Plant physiology, Swamps, Peat, Photosynthesis.

39-2662
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Khodachek, E.A., Vsesoiuznoe soveshchanie po adaptatsii organizmov k usloviiam Kraĭnego Severa, Tallin, Nov. 27-30, 1984. Tezisy dokladov (All-Union conference on adaptation of organisms to the Arctic environment, Tallin, Nov. 27-30, 1984. Proceedings) edited by I. Levengarts and N. Semenova, Tallin, 1984, p.183-187, In Russian. 4 refs.
Plant ecology, Plant physiology, Growth, Polar regions, Meteorological factors.

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Mosses, Soil microbiology, Fungi, Lichens, Ecosystems, Polar regions, Plant ecology, Deserts, Arctic landscapes, Swamps, Vegetation.

39-2664
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Bolotova, E.S.
Taiga, Tundra, Meadow soils, Grasses, Plant ecology, Plant physiology, Photosynthesis.

39-2665
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Den'ko, E.I.
Tundra, Deserts, Plant ecology, Plant physiology, Ecosystems.

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Deserts, Tundra, Plant ecology, Plant physiology, Forest tundra, Rock streams, Polar regions, Growth.

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Winter maintenance, Road maintenance, Snow removal, Ice removal.

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Avalanche formation, Snow accumulation, Countermeasures, Safety.

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Forest lines, Tundra, Plant ecology, Plant physiology, Ecosystems, Distribution, Canada—Quebec.

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Avalanches, Avalanche formation, Statistical analysis, France.

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Freeze thaw cycles, Loams, Soil strength, Shear strength, Cohesion, Frost heave, Soil erosion, Experimentation.

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Hummocks, Plant tissues, Grasses, Growth, Temperature effects, United States—Alaska.

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Ground ice, Glacier ice, Isotopic analysis, Pleistocene, Paleoclimatology, Canada—Northwest Territories—Victoria Land.

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Lichens, Substrates, Plant ecology, Mountains, Polar regions, Wind factors, Air pollution.

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Soil chemistry, Periglacial processes, Geochemistry, Clay minerals, Microstructure, Weathering.

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Ice formation, Ice detection, Ice prevention, Railroads, Noise (sound), Electric power, Transportation.

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Gloersen, P., et al, USSR/USA Bering Sea Experiment. Final Symposium on the Results of the Joint Soviet-American Expedition, Leningrad, May 12-17, 1974. Edited by K.IA. Kondrat'ev, IU.I. Rabinovich and W. Nordberg, Rotterdam, A.A. Balkema, 1982, p.278-288, 6 refs. For Russian original see 31-38.
Ramseier, R.O., Campbell, W.J., Kuhn, P.M., Webster, W.J., Jr.
Sea ice, Infrared equipment, Ice cover thickness, Air temperature, Atmospheric circulation, Microwave sounding techniques, Bering Sea.

39-2748
Analysis of the results of measurements of ice cover characteristics (Option C).
Rabinovich, IU.I., et al, USSR/USA Bering Sea Experiment. Final Symposium on the Results of the Joint Soviet-American Expedition, Leningrad, May 12-17, 1974. Edited by K.IA. Kondrat'ev, IU.I. Rabinovich and W. Nordberg, Rotterdam, A.A. Balkema, 1982, p.289-307, 9 refs. For Russian original see 31-39.
Loshchilov, V.S., Shul'gina, E.M.
Sea ice, Drift, Ice edge, Ice cover strength, Ice cover thickness, Aerial surveys, Physical properties, Airborne equipment, Ships, Microwave sounding techniques.

39-2749
Preliminary study of glacial geomorphology in area between Breid Bay and the Sör Rondane Mountains in Queen Maud Land, East Antarctica.
Nishio, F., et al, *Antarctic record*, Dec. 1984, No.83, p.11-18, With Japanese summary. 10 refs.
Ice surface, Ice shelves, Ice structure, Antarctica—Queen Maud Land.
The obstruction by the Sor Rondane Mountains to the ice flow causes the elevated ice surface south of the mountains, and also the extremely low level north of the mountains. Outlines of the ice shelf front and the respective positions have remained unchanged over twenty-three years, but the reentrant, a widely and deeply fractured zone, is formed in in the ice shelf between the Base Roi Baudouin and the ice front. It was found that the reentrant was formed between 1967 and 1973, and further fracturing of the platform of this ice shelf may occur with the development of crevasses, and therefore the ice shelf may break off. A rough estimate of the mass budget of the ice sheet in the area between Breid Bay and the Sor Rondane Mountains suggests that the ice sheet may keep the present shape owing to the high accumulation rate over the ice sheet surface at present. If the present accumulation rate decreases, a lowering of the ice sheet surface may occur and, therefore, the thinning of the ice sheet lies well below sea level. (Auth.)

39-2750
Studies on the supraglacial lake located on the Shirase Glacier near the Oku-hyoga Rock.
Nishio, F., et al, *Antarctic record*, Dec. 1984, No.83, p.75-80, In Japanese with English summary. 3 refs.
Naito, Y., Iwanami, K., Futatsumachi, S.
Glacial lakes, Subglacial drainage, Limnology, Antarctica—Shirase Glacier.
On the east side of the Shirase Glacier near the Oku-hyoga Rock a supraglacial lake has been observed nearly at the same position since January 1962. The lake is 2700 m long and 360 m wide. The elevation of the lake's surface is between 56 and 65 m above sea level and the bottom of the lake is 16 to 25 m above sea level. The lake water was collected and its specific conductivity measured. The composition of the lake water shows it to be melted snow or ice, not sea water. Therefore, the bottom of the lake might not be connected with the sea. The lake may have been formed by a fissure on the glacier ice resulting from the strong shear stresses between the west side of fast moving glacier ice mass in the Shirase Glacier and the east side of ice mass obstructed by the subglacial topography. (Auth.)

39-2751
Mass-blasting technique in freezing weather. [Provedenie massovykh vzryvov v zimnee vremia].
Makhov, A.P., et al, *Bezopasnost' truda v promyshlennosti*, Dec. 1984, No.12, p.27-28, In Russian.
Kobel'kov, G.P., Volchenko, N.G.
Quarries, Earthwork, Blasting, Boreholes, Mining, Frost action.

39-2752
Rapid method of determining thawing depth of rocks. [Ekspress-metod opredeleniia glubiny protaivaniia gornogo massiva].
Umantsev, R.F., et al, *Bezopasnost' truda v promyshlennosti*, July 1984, No.7, p.15, In Russian.
Vasil'ev, P.N.
Shaft sinking, Mining, Permafrost thermal properties, Thawing rate, Measuring instruments.

39-2753
Influence of ice on structural relations of coastal landscapes of southeastern seas. [Vliianie l'da na strukturnye sviazi beregovykh landshaftov dal'nevostochnykh morel].
Stepanova, L.E., *Geograficheskoe obshchestvo SSSR. Izvestiia*, 1984, 116(6), p.530-533, In Russian. 5 refs.
Sea ice distribution, Shores, Landscape types, Coastal topographic features, Shoreline modification, Ice erosion.

39-2754
Influence of draining non-chernozem paluded forests on vegetational dynamics. [Vliianie gidromelioratsii na dinamiku napochvennogo pokrova v zabolochennykh lesakh Nechernozem'ia].
Fediukov, V.I., et al, *Geograficheskoe obshchestvo SSSR. Izvestiia*, 1985, 117(1), p.24-27, In Russian. 5 refs.
Alekseev, I.A.
Forest land, Paludification, Drainage, Plant ecology, Ecosystems.

39-2755
Thermal insulation and additional moisture insulation in buildings. [Lisälämmöneristettyjen rakenteiden kosteustekninen toiminta].
Kohonen, R., et al, *Finland. Technical Research Centre. Research reports*, 1984, No.277, 93p. + append., In Finnish. 7 refs.
Buildings, Thermal insulation, Moisture, Countermeasures, Computer applications, Diffusion, Maintenance.

39-2756
Behavior and design of concrete structures under thermal gradients. [Lampokuormien alaisten terasbetonirakenteiden toiminta ja mitoittaminen].
Jokela, J., et al, *Finland. Technical Research Centre. Research reports*, 1985, No.338, 81p., In Finnish with English summary. 11 refs.
Huovinen, S.
Concrete structures, Temperature effects, Dynamic loads, Concrete strength, Stresses, Temperature gradients, Rheology, Tensile properties.

39-2757
Structural pattern in alpine tundra vegetation.
Welden, C., *American Journal of botany*, Jan. 1985, 72(1), p.120-134, 17 refs.
Alpine tundra, Vegetation, Snow cover effect, Plants (botany), Distribution, United States—Colorado—Front Range.

39-2758
Comparison of observations and macroclimatic model estimates of monthly winter soil temperatures at Ottawa.
Dwyer, L.M., et al, *Canadian journal of soil science*, Feb. 1985, 65(1), p.109-122, With French summary. 17 refs.
Hayhoe, H.N.
Soil temperature, Snow cover effect, Vegetation factors, Winter, Models, Snow accumulation, Canada—Ontario—Ottawa.

39-2759
Remote sensing in the North Alaska stream icings.
Dean, K.G., *Northern engineer*, Spring 1984, 16(1), p.4-7, 7 refs.
Naleds, River ice, Ice formation, Remote sensing, Icing, LANDSAT, Seasonal variations, United States—Alaska.

39-2760
Arctic house.
Nottingham, D., et al, *Northern engineer,* Spring 1984, 16(1), p.8-11.
Stevens, M.
Permafrost beneath structures, Thermal insulation, Houses, Cold weather construction, Climatic factors, United States—Alaska.

39-2761
Direct conversion of peat to liquid fuel: Alaska's resource and opportunity.
Molton, P.M., et al, *Northern engineer,* Spring 1984, 16(1), p.14-19, 9 refs.
Fassbender, A.G., Brown, M.D.
Natural resources, Peat, Fuels, Sewage treatment, Sludges, Biomass, Liquids, United States—Alaska.

39-2762
Yukon river breakup: the 82-year record.
Fountain, A.G., *Northern engineer,* Spring 1984, 16(1), p.20-24, 15 refs.
Ice breakup, River ice, Ice jams, Floods, United States—Alaska—Yukon River.

39-2763
Building the Alaska highway: political background.
Naske, C.M., *Northern engineer,* Spring 1984, 16(1), p.25-35, 21 refs.
Roads, Cold weather construction, Soil strength, Trafficability, Military transportation, United States—Alaska.

39-2764
Simple device to improve low temperature driving.
Coutts, J., *Northern engineer,* Spring 1984, 16(1), p.36-37.
Motor vehicles, Engine starters, Heat transfer, Ice fog.

39-2765
Hydrology and glaciology at the 18th General Assembly of the IUGG in Hamburg. [Gidrologiia i gliatsiologiia na XVIII general'noĭ assamblee MGGS v Gamburge],
Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.3-7, In Russian.
Dreĭer, N.N.
Glaciology, Research projects, Spaceborne photography, Hydrology, Meetings, Aerial surveys, Mathematical models, Spacecraft.

39-2766
Glaciation of South America. [Oledenenie IUzhnoĭ Ameriki],
Glebova, L.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.29-43, 30 refs., In Russian with English summary.
Korakin, V.S., Loseva, I.A.
Glaciation, Glacier surges, Glacial deposits, Mountain glaciers, Mapping, Slope processes, Surveys, Glaciology, Theories.

39-2767
Combined method of mapping snow cover characteristics in mountains of western Canada and the United States. [Opyt kompleksnogo kartografirovaniia kharakteristik snezhnogo pokrova gor zapada Kanady i S.Sh.A.],
Ivanovskaia, T.E., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.44-56, 13 refs., In Russian with English summary.
Mapping, River basins, Valleys, Snow accumulation, Snow cover distribution, Charts, Snow depth, Alpine landscapes, Snow water equivalent.

39-2768
Ice-snow ablation runoff in mountains of western Canada and the United States. [Talyĭ snegovoĭ i lednikovyĭ stok gor zapada Kanady i S.Sh.A.],
Dreĭer, N.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.56-63, 9 refs., In Russian with English summary.
Anan'icheva, M.D.
Snow cover distribution, Snow water equivalent, Runoff, Mountain glaciers, Ablation, Alpine landscapes, River basins, Valleys.

39-2769
Methods of compiling ablation runoff maps of continents for the Atlas of Snow-Ice Reserves of the World. [K metodike sostavleniia kart talogo stoka materikov dlia Atlasa snezhno-ledovykh resursov mira],
Aliushinskaia, N.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.63-68, In Russian with English summary.
Kupriianov, V.V., Markova, O.L.
Land ice, Snow cover distribution, Glacier ablation, Snowmelt, Mapping.

39-2770
Methods of mapping heat resources in mountain glacier regions of the world. [Metodika sostavleniia kart teplovykh resursov v gorno-lednikovykh raĭonakh mira],
Davidovich, N.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.68-80, 4 refs., In Russian with English summary.
Mapping, Mountain glaciers, Valleys, Alpine landscapes, Microclimatology, Ice air interface, Heat transfer, Air temperature, Temperature gradients.

39-2771
Depiction of climatic peculiarities of warm periods of the Alpine high-altitude zone on glacioclimatic maps. [Otobrazhenie osobennosteĭ klimata teplogo perioda vysokogornoĭ zony Al'p na gliatsioklimaticheskikh kartakh],
Voloshina, A.P., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.80-92, 19 refs., In Russian with English summary.
Precipitation (meteorology), Mapping, Alpine landscapes.

39-2772
Classification of natural ice of the Earth. [Klassifikatsiia prirodnykh l'dov Zemli],
Vtiurin, B.I., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.93-104, 18 refs., In Russian with English summary.
Vtiurina, E.A.
Land ice, Ground ice, Sea ice distribution, Glaciology, Ice composition, Ice chemistry, Classifications, Ice formation.

39-2773
Genetic classification and diagnostic features of snow avalanches. [Geneticheskaia klassifikatsiia i diagnosticheskie priznaki snezhnykh lavin],
Dziuba, V.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.97-104, 18 refs., In Russian with English summary.
Laptev, M.N.
Avalanche formation, Avalanche forecasting, Classifications, Snow cover distribution, Snow depth, Snow stratigraphy, Avalanche triggering.

39-2774
Regionalization of the Soviet Union according to prevailing genetic types of avalanches. [Raionirovanie Sovetskogo Soiuza po preobladaiushchemu genezisu lavin],
Dziuba, V.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.104-109, 14 refs., In Russian with English summary.
Zolotarev, E.A.
Avalanche formation, Avalanche triggering, Classifications, Alpine landscpaes, Mapping, Slope processes.

39-2775
Conditions of avalanche formation in coastal areas of northern Kuril Islands, Kamchatka and the Chukotskiy Peninsula. [Usloviia obrazovaniia lavin v priberezhnykh raĭonakh Severnykh Kuril, Kamchatki i Chukotki],
Miagkov, S.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.109-114, 114 refs., In Russian with English summary.
Troshkina, E.S.
Shore erosion, Slope stability, Snow cover distribution, Snow cover stability, Avalanche formation.

39-2776
Ice runoff conditions and the form of fjords. [Usloviia stoka l'da i forma fiordov],
Glazovskiĭ, A.F., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.115-119, 8 refs., In Russian with English summary.
Glacial erosion, Glacier flow, Fjords, United States—Alaska, Canada—British Columbia.

39-2777
Deep structure of the glacial Lomonosov Plateau on western Spitsbergen. [Glubinnoe stroenie lednikovogo plato Lomonosova na o. Zap. Shpitsbergen],
Zagorodnov, V.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.119-126, 10 refs., In Russian with English summary.
Ice coring drills, Ice cores, Ice structure, Firn stratification, Climatic changes.

39-2778
Recent glaciation of the Sarez Lake Basin and the glacial runoff component in its water balance. [Sovremennoe oledenenie basseĭna Sarezskogo ozera i lednikovyĭ stok v ego vodnom balanse],
Shchetinnikov, A.S., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.126-132, 13 refs., In Russian with English summary.
Glacial lakes, Glacier ablation, Runoff, Alimentation, Water balance.

39-2779
Probability forecasts of mass balance of glaciers and glacier systems. [Zadacha veroiatnostnogo prognoza balansa massy lednika i lednikovoĭ sistemy],
Diurgerov, M.B., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.133-145, 17 refs., In Russian with English summary.
Alpine glaciation, Glacier mass balance, Statistical analysis, Forecasting.

39-2780
Surges of the Muzgazy Glacier. [Podvizhka lednika Muzgazy],
Desinov, L.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.145-146, In Russian.
River basins, Mountain glaciers, Glacier flow, Valleys, Glacial erosion, Moraines, Glacier surges, Glacier beds, Glacier oscillation, Charts, USSR—Muksu River.

39-2781
Dynamic (percussion) sounding of snow cover. [Dinamicheskoe (udarnoe) zondirovanie snezhnogo pokrova],
Ermakov, K.K., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.147-155, 14 refs., In Russian with English summary.
Samoilov, R.S.
Snow surveys, Snow strength, Sounding, Probes, Dynamic loads, Measuring instruments.

39-2782
Determining shear properties of snow under rotational shearing stress in field conditions. [Polevoe opredelenie sdvigovykh kharakteristik snega metodom vrashchatel'nogo sreza],
Samoilov, R.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.155-161, 11 refs., In Russian with English summary.
Ushakov, A.I.
Snow surveys, Snow strength, Shear stress, Measuring instruments.

39-2783
Drilling through massive ice of small thickness. [Burenie ledianykh massivov nebol'shoĭ moshchnosti],
Kravchenko, V.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia,* 1984, Vol.50, p.161-164, 2 refs., In Russian with English summary.
Ice cover thickness, Naleds, Ice drills, Thermal drills, Directional drilling.

39-2784
Oblique radio-echo sounding of the Central Tuyuksu Glacier for studying its internal structure. [Metod naklonnogo radiozondirovaniia pri issledovanii vnutrennego stroeniia lednika Tsentral'nyĭ Tuiuksu],
Epov, A.B., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.165-174, 17 refs., In Russian with English summary.
Alpine glaciation, Glacier ice, Ice structure, Radar echoes, USSR—Zailiyskiy Alatau.

39-2785
Calculating snow reserves in the mountain-glacier basin of the Abramov glacier. [Raschet snegozapasov v gorno-lednikovom basseĭne lednika Abramova],
Zhidkov, V.A., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.174-178, 14 refs., In Russian with English summary.
Snow cover distribution, Snow depth, Snow water equivalent, Snow surveys, Alpine landscapes.

39-2786
Possibility of using hydrometeorological data for analyzing hydrographs and evaluating synchronous fluctuations of glacier mass balance. [Vozmozhnosti ispol'zovaniia gidrometeorologicheskoĭ informatsii dlia ob"ektivnogo raschleneniia gidrografa i otsenki sinkhronnosti kolebaniĭ balansa massy lednikov],
Zhuk, V.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.178-181, 3 refs., In Russian with English summary.
Pylev, I.V., Tsigel'naia, I.D.
River basins, Mountain glaciers, Ablation, Runoff, Glacier ice, Glacier mass balance, Hydrography, Computer applications.

39-2787
Influence of the break-off line position on the accuracy of calculated maximum distance of snow avalanche ejection. [O vliianii polozheniia linii otryva na tochnost' raschetnogo opredeleniia maksimal'noĭ dal'nosti vybrosa snezhnykh lavin],
Bozhinskiĭ, A.N., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.182-185, 5 refs., In Russian with English summary.
Avalanche mechanics, Avalanche triggering, Analysis (mathematics).

39-2788
Fluctuation of snow reserves on Spitsbergen. [O kolebaniiakh snezhnosti na Shpitsbergene],
Gus'kov, A.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.185-188, 5 refs., In Russian with English summary.
Troitskiĭ, L.S.
Valleys, Glacier surfaces, Snow surveys, Snow accumulation, Alpine landscapes, Snow cover distribution.

39-2789
Glacier regime and dynamics reflected in the firn line position. [Otrazhenie dinamiki i rezhima lednika v polozhenii firnovoĭ linii],
Chernova, L.P., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.189-192, 12 refs., In Russian with English summary.
Snow line, Glacier alimentation, Glacier mass balance, Snow accumulation, Ablation, USSR - Caucasus.

39-2790
Microstructure of the ice flow velocity field from measurements on Medvezhiy Glacier. [O mikrostrukture polia skorosti dvizheniia l'da v lednikakh (po izmereniiam na lednike Medvezh'em)],
Kazanskiĭ, A.B., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.192-174, 4 refs., In Russian with English summary.
Tiuflin, A.S., Grishin, I.N.
Mountain glaciers, Glacier surges, Glacier ice, Glacier flow, Flow rate.

39-2791
Radio-echo logging of a well drilled in the Fritjof Glacier, Spitsbergen. [Radiolokatsionnyĭ karotazh skvazhiny na lednike Frit'of, Shpitsbergen],
Macheret, IU.IA., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.198-203, 17 refs., In Russian with English summary.
Vasilenko, E.V., Gromyko, A.N., Zhuravlev, A.B.
Glacier ice, Ice physics, Ice structure, Radar echoes, Borehole instruments.

39-2792
Early Holocene glaciation stage of Spitsbergen. [O rannegolotsenovoĭ stadii oledeneniia na Shpitsbergene],
Troitskiĭ, L.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.203-208, 11 refs., In Russian with English summary.
Punning, IA.M.K.
Paleoclimatology, Paleoecology, Glacial erosion, Glacial deposits, Moraines, Ice dating, Glaciation.

39-2793
Snowdrift patches on King George (Waterloo) Island. [Naveiannye snezhniki ostrova King-Dzhordzh (Waterloo)],
Vtiurin, B.I., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.209-214, 7 refs., In Russian with English summary.
Pereletoks, Slope orientation, Metamorphism (snow), Snow cover distribution, Snowdrifts, Firn stratification, Ice structure, Classifications, Ice texture, King George Island.
Permanent snowdrifts are well spread over the ice-free areas of King George Island and along the margins of the ice sheet. They are abundant in the wind shadow of ice cliffs and elevations of the bedrock in the glacier-free areas. The Fildes Peninsula—the largest ice-free area—numbers over 20 permanent snowdrifts, each of them exceeding 1 sq km. They play a leading role in the formation of the present-day exogenetic relief of the island, particularly in the occurrence of cryogenic-denudation terraces. The paper analyses regularities in the spreading of permanent snowdrifts. Special attention is drawn to the analysis of ice structure. The texture of ice and its structural peculiarities as well as their changes with depth are analysed with special reference to one of the permanent snowdrifts. (Auth.)

39-2794
Interaction between glacial systems and human activities and principles of its mapping. [Vzaimodeĭstvie gliatsiosistem s deiatel'nost'iu cheloveka i printsipy ego kartografirovaniia],
Osokin, N.I., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.215-219, 11 refs., In Russian with English summary.
Mining, Forestry, Roads, Pipelines, Urban planning, Permafrost hydrology, Naleds, Thermokarst, Snow cover distribution, Avalanches, Mapping, Engineering geology.

39-2795
Building up ice masses from sea water. [Sozdanie ledovykh massivov iz morskoĭ vody],
Kamenskiĭ, R.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.219-223, 8 refs., In Russian with English summary.
Voĭtkovskiĭ, K.F., Konstantinov, I.P.
Artificial ice, Sea water freezing, Ice accretion.

39-2796
Calculating optimal thickness of the layer of water-ice mixture, used in ice build-up over large areas. [Raschet optimal'noĭ tolshchiny sloia vodno-ledovoĭ smesi pri namorazhivanii l'da na bol'shikh ploshchadiakh],
Sosnovskiĭ, A.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.223-231, 13 refs., In Russian with English summary.
Ice crossings, Artificial ice, Ice water interface, Frost penetration, Snow cover effect, Heat transfer.

39-2797
Spray-cone method of upbuilding ice masses in Spitsbergen. [Opyt primeneniia metoda fakel'nogo namorazhivaniia l'da v usloviiakh Shpitsbergena],
Gokhman, V.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, 1984, Vol.50, p.231-237, 15 refs., In Russian with English summary.
Sosnovskiĭ, A.V.
Ice crossings, Ice (water storage), Artificial ice, Ice (construction material), Hydraulic structures, Dams.

39-2798
Asphalt-concrete reinforcement of slopes of hydraulic structures. [Asfal'to-betonnye krepleniia otkosov gidrotekhnicheskikh sooruzheniĭ],
Zhdanov, IU.K., *Moscow, Strotizdat*, 1984, 187p., In Russian with English table of contents enclosed. 52 refs.
Channels (waterways), Shore erosion, Slope protection, Bitumens, Hydraulic structures, Rivers, Concretes, Frost action, Permafrost beneath rivers.

39-2799
Filchner-Ronne Ice Shelf programme, Report 2 (1985).
Kohnen, H., comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, 136p., Most papers in German with English summary. For individual papers see 39-2800 through 39-2815 or C-31609, -31616, E-31621, F-31608, -31610, -31611, -31623, -31624, I-31612, -31617 through -31620, -31622, J-31613, L-31614, and L-31615.
Research projects, Ice shelves, Ice composition, Ice physics, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf.
The report summarizes first results obtained from analysis of data collected during Phase I investigations in 1983/84 of the Filchner Ice Shelf Project and from related studies presented as papers at the First Filchner Colloquium in October 1984. It includes brief statements of findings in, among other topics, shelf ice accumulation, variations in the ice shelf over the Weddell Sea, borehole studies of the ice shelf, aeromagnetic studies of the ice shelf, katabatic winds, VLF emissions, satellite measurements of the Antarctic Peninsula, aircraft instrumentation, and electromagnetic soundings of the ice shelf.

39-2800
New investigations of accumulation on the Filchner/-Ronne Ice Shelf. [Neuere Untersuchungen zur Akkumulation auf dem Filchner/Ronne Schelfeis],
Reinwarth, O., et al, Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.7-17, In German with English summary. 17 refs.
Graf, W.
Ice accretion, Ice composition, Isotope analysis, Traverses, Ice temperature, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf.
Studies during 1983/84 provide accumulation data for a profile parallel to the ice edge between the western margin and Filchner station and in particular for a traverse route, perpendicular to the ice edge starting at Filchner station and extending 250 km to the SW. Determination of annual layering is based mainly on the analysis of isotopic content (O-18) of samples taken from snow pits, which were dug at 50 km intervals along the traverse. Delta O-18 values of snow pit samples show a pronounced annual variation yielding a reliable time scale. The derived accumulation rates decrease from west to east along the ice edge profile from 30 to 20 g/cm2/a and from Filchner station to the southern end of the traverse from 20 to 15 g/cm2/a, thus leading to rather low accumulation values in the central part. In general low density values for 0-2 m depth also decrease with distance from the ice edge. Ten meter temperatures lower from -25.0 to -27.4 deg and the mean delta O-18 values drop from -24.6 to -28.8‰. This change of isotopic content with temperature is greater than the mean delta value-temperature relationship found for the West Antarctic. (Auth.)

39-2801
Glaciological/geodetic work on the Filchner and Ekström Ice Shelves since 1979/80. [Glazialgeodätische Arbeiten auf dem Filchner- und Ekström Schelfeis seit 1979/80],
Köhler, M., Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.18-25, In German with English summary. 3 refs.
Ice shelves, Geodetic surveys, Ice mechanics, Antarctica—Filchner Ice Shelf, Antarctica—Ekström Ice Shelf.
Geodetic measurements were carried out in order to derive the velocity and strain behavior of Filchner Ice Shelf. The measurements are described and first results are reported. (Auth.)

39-2802
Variation of the ice edge position in the eastern and southern Weddell Sea. [Variation des Schelfeiskantenverlaufs in der östlichen und südlichen Weddell See],
Lange, M., Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.26-31, In German with English summary. 4 refs.
Sea ice, Ice edge, Radar echoes, Ablation, Antarctica—Weddell Sea.
New data are reported on the position of ice edges in the eastern and southern Weddell Sea for the years 1983 and 1984. The data are derived from ship borne radar measurements of individual points along the ice edge together with ship's positions obtained by a satellite navigation system on board RV *Polarstern*. They are accurate to within 0.23 to 0.4 nm (426-741 m). Comparisons of ice shelf margins for the years 1980, 1983 and 1984 allow estimates of the apparent ice edge advance during this period. Together with quantitative ice edge velocities, first conclusions about the ablation along the ice shelf margins in the eastern and southern Weddell Sea are derived. (Auth.)

39-2803
Ice core drilling and drill hole investigations on the Filchner and Ronne Ice Shelves, Antarctica. [Eiskernbohrungen und Bohrlochuntersuchungen auf dem Filchner/Ronne Schelfeis, Antarktis],
Jessberger, H.L., et al, Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.32-41, In German with English summary. 6 refs.
Bässler, K.-H.
Ice coring drills, Borehole instruments, Ice shelves, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf.
An electromechanical shallow ice drill was built following, with a few modifications, the Rufli Ice Drill type. The new equipment was tested in 1981 and 1983 on a glacier of the Alps. During the Antarctic expeditions 1981/82 and 1982/83 it was used on the Ekström Ice Shelf. A hole through the shelf ice was drilled in 15 days (202.8 m). Two boreholes were drilled during the Filchner/Ronne-Ice Shelf traverse 1983/84. The ice drill equipment is developed for taking ice cores from the ice shelf for mechanical and chemical investigations. *In situ* measurement systems for the deformation behavior of the shelf ice can be installed into the boreholes. (Auth.)

39-2804
Glaciological trace element investigations at German antarctic stations. [Spurenstoff-glaziologische Untersuchungen an den deutschen Antarktisstationen],
Görlach, U., et al, Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.42-49, In German with English summary.
Wagenbach, D., Kipfstuhl, J., Stuckenberg, U.
Aerosols, Ice shelves, Snow, Firn, Drainage, Antarctica—Georg von Neumayer Station.
Surface snow, ice cores and aerosol samples in the vicinity of G. v. Neumayer Station were analyzed to learn of the seasonal pattern as well as the lateral and vertical distribution of sea salt deposition. A maximum sea salt production in the austral autumn could be detected clearly in aerosol and dated snow samples. Caused by the small distance to the open ocean surface, extremely high sea salt concentrations (up to 200 mg/kg) are a common phenomenon. Apart from this local effect, it is expected that a combination of stable isotope (O-18, D) and sea salt measurements in snow samples can help to identify different drainage areas of antarctic ice shelves. (Auth.)

39-2805
Hydrography at the edge of Filchner Ice Shelf. [Hydrographie vor dem Filchner Schelfeis],
Rohardt, G., et al, Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.50-57, In German with English summary. 3 refs.
Augstein, E.
Hydrography, Water temperature, Ice shelves, Ice edge, Antarctica—Filchner Ice Shelf.
Hydrographic measurements along the front of the Filchner Ice Shelf confirm earlier Norwegian findings. Near Filchner Station they show a relatively warm water mass which is trapped by cold ice shelf water to the east and west. Data from the eastern part of the Filchner depression support the circulation model of earlier investigators. The 26 hour record of a station at the ice edge with two hourly CTD profiles reveals a clear semidiurnal tidal signal in the temperature measurements. (Auth.)

39-2806
Gravity tides on the Filchner Ice Shelf.
Eckstaller, A., et al, Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.58-59, 1 ref.
Miller, H.
Gravity, Tides, Ice shelves.
In an experimental pilot project, gravity and tidal relationships were observed during a traverse from Filchner Station to 78.6S 55.3W. Diurnal and semidiurnal gravity variations were measured and amplitudes were noted. These variations result mostly from ocean tides and their effect on the floating ice shelf.

39-2807
Aeromagnetic measurements of the Filchner Ice Shelf and near Georg von Neumayer Station as part of the 1983/84 Filchner Ice Shelf Project. [Aeromagnetische Messungen im Filchner Schelfeis und im Gebiet der Georg von Neumayer Station im Rahmen des Antarktiseinsatzes 1983/84 Filchner-Schelfeis-Projekt],
Kahnt, W., et al, Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.60-67, In German with English summary. 1 ref.
Bosum, W.
Magnetic anomalies, Geologic structures, Aerial surveys, Antarctica—Filchner Ice Shelf, Antarctica—Georg von Neumayer Station.
Airborne magnetic measurements proved the reliability and accuracy of the airborne magnetometer, installed in the Dornier aircraft Polar 2. Near Georg von Neumayer Station strong magnetic anomalies were found, which give hints to interesting geological structures. Near Filchner Station smoothed magnetic anomalies of smaller amplitudes, pointing to a deep magnetic basement, were observed. A continuation of the airborne magnetic measurements in a denser grid, especially in the area of the Georg von Neumayer Station is strongly recommended. (Auth.)

39-2808
Photogrammetry in western New Schwabenland 1983/84. [Photogrammetrie im westlichen Neuschwabenland 1983/84],
Sievers, J., et al, Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.68-71, In German with English summary.
Walter, H.
Photogrammetric surveys, Ice shelves, Nunataks, Aerial surveys, Antarctica—New Schwabenland.
During the German Antarctic Expedition 1983/84 the polar research aircraft DO 228-100, called *Polar 2*, could be used for photogrammetric purposes to take aerial vertical photography in parts of western New Schwabenland for producing large scale topographical maps of that region. Operational areas were Georg von Neumayer Station and the ice front of the Ekström Ice Shelf as well as the nunatak region of the Ahlmann Ridge and the Borg Massif. (Auth.)

39-2809
Change in the atmospheric boundary layer with the passage of a synoptic disturbance at Filchner Station. [Die Umstellung der atmosphärischen Grenzschicht beim Durchgang einer synoptischen Störung im Bereich der Filchner-Station],
Schaller, E., Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.72-77, In German with English summary. 2 refs.
Periodic variations, Boundary layer, Atmospheric disturbances, Sounding, Antarctica—Filchner Station.
A mesoscale meteorological experiment was performed during the Antarctic summer season 1983/84 in the vicinity of the German summer station "Filchner" including three stations with vertical soundings (tethersondes, radiosondes) and six automatic stations monitoring the near-surface temperature, humidity, wind speed and direction. A case study is presented showing the temporal change of the boundary layer structure due to a strong synoptic forcing. (Auth.)

39-2810
Are there secondary flows at the edge of the Filchner Ice Shelf. [Gibt es Sekundärströmungen am Rande des Filchner-Schelfeises],
Rose, L., Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.78-85, In German with English summary. 4 refs.
Ice edge, Wind velocity, Thermal effects, Cloud cover, Antarctica—Filchner Ice Shelf.
The first period of intense measurements of the "Mesoscale Experiment at the edge of the Filchner Ice Shelf MEFIS" temporarily showed a local wind system in the ice-shelf, polynya and sea-ice marginal zone. Under a large scale wind of less than 3 m/s a thermally induced confluence was found over the coastal polynya, which can be held responsible for the often observed lower clouds parallel to the edge of the ice shelf. (Auth.)

39-2811
Flow models in katabatic winds. [Strömungstypen bei katabatischem Wind],
Kottmeier, C., Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.86-96, In German with English summary. 2 refs.
Wind velocity, Ice shelves, Thermal regime.
Based on measurements during the meteorological program MEFIS of the Filchner Ice Shelf Expedition 1984, the drainage wind over the Filchner Ice Shelf is discussed. Theoretical considerations and the measurements show that significant drainage winds are not caused by the ice surface inclination alone. A mechanism is pointed out, which relates the observed katabatic wind to different thermal structures of the atmosphere over the inner shelf ice and the marginal zone. (Auth.)

39-2812
Case study of a mesoscale disturbance at Filchner Station. [Fallstudie einer Mesostörung im Bereich der Filchner-Station],
Halbsguth, G., Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.96-103, In German with English summary.
Atmospheric composition, Boundary layer, Sounding, Ice shelves, Ice air interface, Antarctica—Filchner Ice Shelf.
During the Antarctic summer season 1983/84 the influence of a mesoscale-disturbance on the atmospheric boundary layer of the Filchner/Ronne-iceshelf was measured. Vertical soundings with tethersondes and radiosondes at two stations at a distance of 25 km show the spatial and temporal structure of the phenomenon. It can be classified to the mesoscale beta. (Auth.)

39-2813
Investigations of cosmic dust in the antarctic shelf ice. [Untersuchungen von kosmischem Staub aus antarktischem Schelfeis],
Thiel, K., Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.104-112, In German with English summary. 10 refs.
Cosmic dust, Ice shelves, Antarctica—Atka Bay.
During the German Antarctic Expeditions 1980/81 and 1982/83 approx. 4 tons of shelf ice were recovered from Atka Bay near the Georg von Neumayer Station. The aim of the study was to isolate and analyze potentially extraterrestrial dust particles. About 650 spherules extracted from the ice by filtration were investigated. Most of the particles exhibit an elemental pattern which can be closely related to meteoritic matter. The mass frequency distribution of the spherules yields global influx rates of 49,000 t/a for metallic particles and 6000 t/a for glassy particles in the mass range >1,000,000g. A comparison with the interplanetary dust complex indicates that the cosmic particle flux in the mass range .000001g..1000g could possibly be higher than has been estimated up to now. (Auth.)

39-2814
Sulphur isotope measurements in antarctic firn: a method for studying the atmospheric sulphur cycle. [Schwefel-Isotopenmessungen am antarktischen Firnschnee: ein Weg zur Erforschung des atmosphärischen Schwefelkreislaufs],
Nielson, H., Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.118-123, In German with English summary. 3 refs.
Firn, Snow composition, Isotope analysis.
S isotope data from snow-firn samples taken near Georg von Neumayer Station in 1980/81 and 1981/82 are analysed for two components: isotopically heavy marine sulfate (seaspray or sea ice), which in its concentration usually correlates with the chlorinity, and isotopically light biogenic sulfur, probably transported as volatile S organic compounds and lateron oxidized to sulfate. Generally the sulfur of the samples investigated is dominated so strongly by the marine sulfate that the budget of the biogenic component can be evaluated only with great uncertainty. Better results are expected from future core drillings at a greater distance from the shoreline. Then it will also be possible to verify seasonal or long-term variations of the biological productivity in the circumpolar ocean. (Auth.)

39-2815
Doppler satellite measurements on the Antarctic Peninsula. [Doppler-Satellitenmessungen auf der Antarktischen Halbinsel],
Seeber, G., Filchner-Ronne Ice Shelf programme, Report 2 (1985), H. Kohnen, comp, Bremerhaven, Alfred Wegener Institute for Polar Research, 1985, p.124-129, In German with English summary. 2 refs.
Ice sheets, Ice creep, Ice shelves, Drift, Spaceborne photography.
Doppler observations were performed between 1982 and 1984 in order to determine ice motion parameters on Anvers Island. Through translocation techniques with a reference station on rock, four control points were installed on ice. Drift rates are between 0.1 m and 0.2 m/year. From comparisons between repeated observations in different years and seasonal solutions it can be seen that translocation observations over less than 1 week lead to significant results. *In comparison with parallel* observations on the Filchner Ice Shelf it could be shown that with translocation observations over a distance of 1,500 km the necessary observation time for the determination of ice motion parameters can be reduced by half. The future role of GPS for Antarctic research is discussed. (Auth.)

39-2816
Disorder-induced piezoelectric and piezo-optic effects. 1. The theory of the piezoelectric properties and its application to ice.
Whalley, E., et al, *Journal of chemical physics.* Dec. 15, 1984, 81(12), p.6119-6123, 9 refs.
Klug, D.D.
Ice electrical properties, Ice optics, Sound waves, Strains, Polarization (waves), Light scattering, Theories, Analysis (mathematics).

39-2817
Lattice vibrations of ices Ih, VIII, and IX.
Tse, J.S., et al, *Journal of chemical physics,* Dec. 15, 1984, 81(12), p.6124-6129, 24 refs.
Klein, M.L.
High pressure ice, Ice crystal structure, Ice mechanics, Vibration, Molecular structure, Neutron diffraction, Lattice models, Protons, Spectra.

39-2818
Dielectric properties of single crystals of HCl-doped ice.
Takei, I., et al, *Journal of chemical physics,* Dec. 15, 1984, 81(12), p.6186-6190, 13 refs.
Maeno, N.
Doped ice, Ice electrical properties, Ice crystal structure, Ice composition, Electrical resistivity, Dielectric properties, Temperature effects, Analysis (mathematics).

39-2819
Effective pair potentials and the structure of ices VIII and IX.
Impey, R.W., et al, *Journal of chemical physics,* Dec. 15, 1984, 81(12), p.6406-6407, 15 refs.
Klein, M.L., Tse, J.S.
High pressure ice, Ice crystal structure, Protons, Molecular energy levels, Pressure.

39-2820
Temperature fluctuations in Alpine bedrocks and their geomorphic consequences. Example of the Combe de Laurichard, Alps of the Briançonnais, France. [*Régimes thermiques de sols de l'étage périglaciaire et leurs conséquences géomorphologiques. Exemple de la combe de Lauricharď, Alpes du Briançonnais, France*],
Francou, B., *Géographie physique et Quaternaire,* 1983, 37(1), p.27-38, 10 refs., In French with English and German summaries.
Geomorphology, Rocks, Temperature variations, Snow cover effect, Snow depth, Mountains, Rock glaciers, Slopes, Talus.

39-2821
Glacial lakes of Banks Island, Canadian Arctic. [*Les lacs glaciaires de l'île de Banks, arctique canadien*],
Vincent, J.S., *Géographie physique et Quaternaire,* 1983, 37(1), p.39-48, 8 refs., In French with English and German summaries.
Glacial lakes, Glacial deposits, Glaciation, Mapping, Canada—Northwest Territories—Banks Island.

39-2822
Ice-made pans and pools in the salt marsh of Isle-Verte, St.-Lawrence Estuary, Quebec. [*Mares glacielles et non glacielles dans le marais salé de l'Isle Verte, estuaire du Saint-Laurent, Québec*].
Gauthier, B., et al, *Géographie physique et Quaternaire,* 1983, 37(1), p.49-66, Refs. p.64-66., In French with English and German summaries.
Goudreau, M.
Swamps, Ice formation, Geomorphology, Salt water, Distribution.

39-2823
Automation in organizing railroad construction. [*Avtomatizatsiia proektirovaniia organizatsii stroitel'stva zheleznykh dorog*].
Pershin, S.P., ed, *Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy,* 1983. Vol.722, 116p., In Russian. For selected papers see 39-2824 through 39-2827. Refs passim.
Railroads, Snow roads, Roadbeds, Ice roads, Earthwork, Quarries, Taiga, Permafrost beneath structures, Swamps, Construction materials, Construction equipment, Permafrost control, Environmental impact, Revegetation.

39-2824
Methods of determining the length of service of earth excavation machines in railroad construction. [*Metody opredeleniia srokov sluzhby zemleroĭnykh mashin v zheleznodorozhnom stroitel'stve*],
Lutskiĭ, S.IA., et al, *Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy,* 1983, Vol.722, p.12-20, In Russian. 5 refs.
Rotkegel', U., Lebedev, G.I., IUriatin, M.V.
Railroads, Roadbeds, Embankments, Earthwork, Excavation, Construction equipment, Permafrost.

39-2825
Modeling roadbed construction with permafrost preservation. [*Model' sooruzheniia zemlianogo polotna s konservatsiel vechnoĭ merzloty*],
Ivanov, M.I., et al, *Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy,* 1983, Vol.722, p.21-27, In Russian. 5 refs.
Matiugin, S.K.
Railroads, Roadbeds, Embankments, Permafrost beneath structures, Permafrost control.

39-2826
Statistical analysis of quarry excavations for the construction of the BAM and Tyumen'-Surgut lines. [*Statisticheskiĭ analiz kar'ernykh vyrabotok stroiashchikhsia zheleznodorozhnykh linii BAM i Tiumen'-Surgut*],
Lukashuk, L.V., et al, *Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy,* 1983, Vol.722, p.28-33, In Russian.
Gribova, M.M., Bergen, A.R.
Quarries, Roadbeds, Earthwork, Excavation, Construction materials, Environmental impact, Revegetation.

39-2827
Pecularities of the preparation period for construction under severe natural and climatic conditions. [*Osobennosti podgotovitel'nogo perioda stroitel'stva v surovykh prirodno-klimaticheskikh usloviiakh*],
Klenov, V.V., *Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy,* 1983, Vol.722, p.104-106, In Russian.
Railroads, Buildings, Roadbeds, Snow roads, Ice roads, Subarctic regions, Permafrost beneath structures, Taiga, Swamps.

39-2828
Not a search for kiwi bird. [*IA iskal ne ptitsu kivi*],
Zotikov, I., Leningrad, Gidrometeoizdat, 1984, 144p., In Russian.
Ice shelves, Antarctica—Ross Ice Shelf.
The author, a Soviet glaciologist with more than 20 years of participation in Soviet and American antarctic expeditions, writes of his work on the Ross Ice shelf, his visits and cooperation with U.S. research institutions, and personal experiences and observations in the U.S. and New Zealand.

39-2829
Propagation of visible and infrared radiation by fog, rain, and snow.
Winchester, L.W., Jr., et al, *U.S. Army Tank-Automotive Command Research and Development Center. Technical report,* July 1982, No.12685, 97p., ADA-126 062, Refs. p.95-97.
Gimmestad, G.G.
Snow physics, Wave propagation, Microwaves, Light scattering, Atmospheric attenuation, Radiation, Rain, Fog, Snowfall, Experimentation.

39-2830
Blizzard of February 4-5, 1984 over the eastern Dakotas and western Minnesota.
Weiland, M., *U.S. National Oceanic and Atmospheric Administration. NOAA technical memorandum,* Oct. 1984, NWS CR-73, 12p. + append., PB85-120 087, 2 refs.
Snowfall, Meteorological data, Wind velocity, Visibility, Weather observations, Atmospheric pressure, Air temperature, Meteorological charts.

39-2831
Arctic marine acoustics.
Kutschale, H.W., *Columbia University. Lamont-Doherty Geological Observatory* [*Report*], Oct. 1984, N00014-80-C-0021, 229p., ADA-147 492, 22 refs.
Sea water, Ice cover effect, Wave propagation, Underwater acoustics, Acoustics, Surface roughness, Computer applications, Models, Arctic Ocean.

39-2832
Concrete under arctic conditions.
Kivekäs, L., et al, *Finland. Technical Research Centre. Research reports,* 1985, No.343, 53p. + appends., 17 refs.
Huovinen, S., Leivo, M.
Frost resistance, Concrete strength, Cold weather construction, Concrete freezing, Air entrainment, Temperature effects, Elastic properties, Compressive properties, Brittleness.

39-2833
Iceberg fragmentation by thermal shock.
Diemand, D., *Iceberg research,* Oct. 1984, No.8, p.8-10, 11 refs.
Icebergs, Ice breaking, Thermal effects, Ice strength, Compressive properties, Fragmentation.

39-2834
Tabular icebergs off Nordostrandingen, North East Greenland.
Massom, R., *Iceberg research,* Oct. 1984, No.8, p.11-16, 27 refs.
Icebergs, Profiles, Distribution, Calving, Theories, Greenland.

39-2835
Measurement of iceberg temperatures.
Diemand, D., *Iceberg research,* July 1983, No.5, p.3-16, 39 refs.
Icebergs, Ice temperature, Ice strength, Heat transfer, Temperature measurement, Ablation, Labrador Sea.

39-2836
Iceberg distributions in the Labrador Sea from SLAR imagery 1978-1980.
Sutton, J., et al, *Iceberg research,* July 1983, No.5, p.17-20, For another version see 38-2731.
Mudry, P.
Icebergs, Sea ice distribution, Remote sensing, Side looking radar, Ice floes, Labrador Sea.

39-2837
Iceberg draft measurements off eastern Canada.
Ruffman, A., *Iceberg research,* July 1983, No.5, p.20-21.
Icebergs, Profiles, Side looking radar, Measuring instruments.

39-2838
Asphalt pavements modified with coarse rubber particles: design, construction, and ice control observations.
Esch, D., *U.S. Federal Highway Administration. Report,* Aug. 1984, FHWA-AK-RD-85-07, 35p. + append., 5 refs.
Pavements, Bituminous concretes, Ice control, Rubber, Paving, Design, Particle size, Flexural strength, Fatigue (materials).

39-2839
Mortar in historic buildings. [*Historiallisten kivirakenteiden laastit*],
Perander, T., et al, *Finland. Technical Research Centre. Research reports,* 1985, No.341, 48p. + appends., In Finnish with English summary. 102 refs.
Råman, T., Kanerva, M., Vahanen, R.
Mortars, Frost resistance, Concrete durability, Weathering, Moisture, Buildings, Rocks, Microstructure.

39-2840
Conferences 1961 to 1981; bibliography.
International Society for Terrain-Vehicle Systems, *SFM specialnotiser,* 1984, No.29, 165p.
Vehicles, Trafficability, Snow cover effect, Ice cover effect, Soil strength, Bibliographies, Meetings, Tracked vehicles.

39-2841
Review of floating ice thickness measurement capability, technologies and opportunities.
CANPOLAR Consultants, Ltd., Toronto, Ontario, Jan. 1985, 76p., Refs. p.67-76.
Floating ice, Ice cover thickness, Ice composition, Ice physics, Ice salinity, Icebergs, River ice, Lake ice, Ice islands, Radio echo sounding.

39-2842
Thermal (2-5.6 micron) emittance of diathermanous materials as a function of optical depth, critical angle and temperature.
Munis, R.H., et al, MP 1863, Society of Photo-Optical Instrumentation Engineers. Proceedings, Vol.510. Infrared technology X, Bellingham, WA, 1984, p.209-220, 11 refs.
Mershall, S.J.
DLC TA1570.I55b
Temperature measurement, Materials, Infrared photography, Thermal radiation, Optical properties, Spectra, Reflectivity, Temperature effects, Mathematical models.
Thermal measurements of the normal emittance of several diathermanous materials were made at 15.2 C, 4.9 C and -5.6 C. Calculations of the total hemispherical emittance were made from normal emittance and plotted against the optical depth. A comparison of these data with a model proposed by Gardon indicates that at near-ambient temperatures they agree very closely. It has been observed that normal emittance is greater than hemispherical emittance by approx. 5% for both weakly and strongly absorbing materials. This is attributable to phase differences in the multiply reflected internal radiation attempting to exit the specimen throughout steradians. Other radiation properties of the materials, i.e. diffuse transmittance, absorption coefficient, and absorption index were calculated.

39-2843
Radio echo sounding of the marginal zone of the inland ice in the vicinity of Disko Bay, 1984. [Radio ekko målinger af indlandsisens randzone i Disko Bugt området]
Thomsen, H.H., et al, *Denmark. Grönlands geologiske undersögelse. Gletscher-hydrologiske meddelelser,* Jan. 1985, 85(1), 20p., In Danish with English summary. 13 refs.
Madsen, P.S.
Radio echo soundings, Glacier beds, Topographic surveys, Mapping, Radar echoes, Greenland.

39-2844
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Alpine glaciation, Mountain glaciers, Quaternary deposits, Moraines, Paleoclimatology, Glacial deposits, Cirque glaciers, Italy—Matese Mountain.

39-2845
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Anchors, Power line supports, Concrete piles, Permafrost beneath structures.

39-2846
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Anchors, Power line supports, Concrete piles, Construction equipment, Permafrost beneath structures.

39-2847
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Glaze, Hoarfrost, Radar echoes, Precipitation (meteorology), Rain, Icing, Snow, Ice loads, Wind factors, Phase transformations, Charts.

39-2848
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Snowfall, Precipitation gages, Radar, Antarctica.
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39-2849
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Radar echoes, Precipitation (meteorology), Rain, Phase transformations, Snow, Polar regions.

39-2850
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Glaze, Hoarfrost, Icing, Wind factors, Charts, Ice loads.

39-2851
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Subgrades, Frost penetration, Frost heave, Subgrade soils, Drainage, Subarctic landscapes, Soil water migration, Roads, Sand drains.

39-2852
Using soil cement under severe climatic conditions. [Primenenie tsementogruntov v usloviiakh surovogo klimata]
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Roadbeds, Subgrade preparation, Soil cement, Baykal Amur railroad, Frost resistance.

39-2853
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Cements, Roadbeds, Pavements, Sands, Foundations, Frost resistance, Gravel.

39-2854
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39-2855
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39-2856
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39-2857
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Residential buildings, Houses, Subarctic landscapes.

39-2858
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39-2859
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Urban planning, Buildings, Subpolar regions.

39-2860
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39-2861
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Sellanov, L.A.
Concrete structures, Reinforced concretes, Concrete strength, Freeze thaw cycles, Frost resistance, Tensile properties, Compressive properties, Fracturing.

39-2862
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Pavements, Gravel, Naleds, Countermeasures, Alpine landscapes.

39-2863
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Avalanche engineering, Avalanche mechanics, Impact strength, Impact tests, Snow retention, Snow fences, Walls, Dams.

39-2864
Inspection of the environment and of ground at the base of foundations of smaller artificial structures. [Obsledovanie gruntov osnovaniĭ i sredy malykh iskusstvennykh sooruzheniĭ]
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Embankments, Railroad tracks, Bridges, Foundations, Piles, Permafrost beneath structures, Frost heave, Engineering geology, Railroads.

39-2865
Large panel construction at the BAM. [Krupnopanel'noe stroenie na BAMe]
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Residential buildings, Large panel buildings, Permafrost beneath structures, Baykal Amur railroad.

39-2866
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Concrete structures, Prefabrication, Concrete aggregates, Cements, Centrifuging, Water content.

39-2867
Experience in using loaders at a BAM construction site. [Iz opyta primeneniia pogruzchikov na BAMe]
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Chebanov, L.S., Anisimov, D.I., Gorshkov, A.G.
Earthwork, Excavation, Loading, Frozen cargo, Gravel, Railroads, Frozen ground, Construction equipment.

39-2868
Improving the organization of the preliminary preparation period in railroad construction. [Sovershenstvovanie organizatsii podgotovitel'nogo perioda stroitel'stva zheleznykh dorog]
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39-2869
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39-2870
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39-2871
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Groves, J.
Ocean bottom, Bottom sediment, Pack ice, Remote sensing, Bottom topography, LANDSAT, Reflection, United States—Alaska—Prudhoe Bay.

39-2872
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Longworth, J., Warwaruk, J.
Concrete structures, Concrete strength, Concrete freezing, Cold weather construction, Masonry, Walls, Freeze thaw cycles, Compressive properties, Moisture transfer, Mortars, Tests.

39-2873
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Ice navigation, Offshore structures, Icebreakers, Cold weather construction, Exploration, Caissons, Canada.

39-2874
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39-2875
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Ice navigation, Research projects, Hydrates, Natural gas, International cooperation, USSR, Canada.

39-2876
Arctic shipping. *Arctic news-record,* Dec. 1984, 3(3), p.37-46.
Ice navigation, Marine transportation, Icebergs, Ships, Arctic Ocean.

39-2877
Development and fluctuation of Antarctica's Cenozoic glaciation: the terrestrial record.
Tingey, R.J., *Australian meteorological magazine,* June 1982, Vol.30(2), p.181-189, For same article from a different source see 13F-27493 or 37-1384.
Glacial geology, Glaciation.
The Dry Valleys region, near McMurdo Sound in the southwest corner of the Ross Sea, displays a history of multiple glaciations that involved complex interplay between outflow glaciers from the east Antarctic ice sheet, local mountain glaciers, and glacial marine incursions from the Ross Sea area. Elsewhere in Antarctica, volcanic rocks that are thought to have been erupted either over early glaciated surfaces, or under glaciers, provide a means for estimating when Antarctic glaciation started. Dates range back to Oligocene times in West Antarctica, and to early Miocene times in East Antarctica's Transantarctic Mountains although glaciological considerations appear to demand that glaciation started first in the latter area. Evidence for fluctuations in the antarctic ice sheet is widespread with at least two glacial stands higher than the present one indicated at many places. The Dry Valleys glacial geology record also shows that at least 400 m of uplift has occurred in the area since Miocene times. (Auth. mod.)

39-2878
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39-2879
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Fog dispersal, Cloud electrification, Cloud chambers, Aerosols, Atmospheric physics, Cloud physics, Models, Laboratory techniques, Experimentation.

39-2880
Compilation of maps of regional evaluation of man-induced thermal settlement of rocks. [Metodika sostavleniia kart otsenki territorii po ustoĭchivosti k tekhnogennym teplovym osadkam],
Shamanova, I.I., *Inzhenernaia geologiia,* Mar.-Apr. 1985, No.2, p.72-78, In Russian. 6 refs.
Permafrost thermal properties, Permafrost structure, Maps, Thawing, Settlement (structural), Heat transfer, Charts.

39-2881
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Clays, Podsol, Loess, Clay minerals, Lacustrine deposits, Moraines, Glacial lakes, Cryogenic soils, Physical properties, Soil water migration, Wettability, Settlement (structural).

39-2882
Snow loads on some types of three-dimensional covers. [O kharaktere snegovykh nagruzok na nekotorykh vidakh prostranstvennykh pokrytiĭ],
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Snow accumulation, Snow loads, Design, Buildings, Roofs, Heating.

39-2883
Specifics of operating complexes of earthwork machines in the North. [Osobennosti ekspluatatsii kompleksov mashin dlia zemlianykh rabot na Severe],
Garkavi, N.G., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1985, No.1, p.86-91, In Russian.
Earthwork, Excavation, Equipment, Polar regions, Cold weather operation, Continuous permafrost.

39-2884
Ultrasonic version of an ice-removing machine. [L'douborochnaia mashina: ul'trazvukovoĭ variant],
Ermilov, A., *Izobretatel' i ratsionalizator,* 1985, No.2, p.12-13, In Russian.
Road icing, Glaze, Ice removal, Ice acoustics, Ultrasonic tests.

39-2885
Quaternary paleoclimatology. Methods of paleoclimatic reconstruction.
Bradley, R.S., Boston, Allen & Unwin, 1985, 472p., Refs. p.417-462.
Ice cores, Ice dating, Ice models, Ice physics, Volcanic ash, Ice composition, Paleoclimatology, Precipitation (meteorology).
This book is an introduction to methods used in reconstructing past climates from proxy data series. A summary of each method is provided, acquainting the reader with the main characteristics of the paleoclimatic record. In reviewing the global climatic variations it is pointed out that, in the Southern Hemisphere, the presence of the high elevation antarctic plateau south of 75S causes there to be a much stronger Equator-Pole temperature gradient than in the Northern Hemisphere. In interpreting isotopic values in world ice cores, temperature and moisture changes are considered which have had an effect on the isotopic composition of antarctic precipitation through time. In the dating of ice cores, the difficulty of counting annual layers in Antarctica, due to low yearly accumulation rates, is discussed. In tabulating the sea-surface paleotemperature reconstructions for 18,000 years BP, Radiolaria is used as the principal faunal group for the antarctic ocean, and the ocean's morphological variations with regard to coiling direction, size, shape, and surface structure are reviewed

39-2886
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Mining, Permafrost, Minerals, Mines (excavations), Cold weather performance.

39-2887
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Lacmann, R.
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39-2888
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39-2889
Developments, aims and possibilities of winter service on federal highways. [Entwicklungen, Ziele und Möglichkeiten des Winterdienstes an Bundesfernstrassen],
Kuhle, H., *Strasse und Autobahn,* Feb. 1985, 36(2), p.63-68, In German.
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39-2890
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Rice, S.A.
Ice spectroscopy, Ice crystal structure, Hydrogen bonds, Ice physics, Molecular structure, Vibration, Protons, Heavy water.

39-2891
Role of atmospheric circulation in the process of formation of the Weddell polynya. [K voprosu o roli atmosfernoĭ tsirkuliatsii v protsesse formirovaniia polyn'i Ueddella],
Lysakov, E.P., *Antarktika; doklady komissii,* 1985, No.24, p.5-11, In Russian. 8 refs.
Sea ice, Polynyas, Atmospheric disturbances, Antarctica—Weddell Sea.
Comparison of data on atmospheric processes over the Atlantic sector of the Antarctic, collected between 1971 and 1979, and satellite information on changes in the sea ice along the Maude Rise, shows a relationship between atmospheric conditions and formation of polynyas in the area.

39-2892
First attempt at structural interpretation of Landsat images of west antarctic mountain regions. [Pervyĭ opyt strukturnogo deshifrirovaniia kosmicheskikh fotosnimkov gornykh raĭonov Zapadnoĭ Antarktidy],
Bud'ko, V.M., et al, *Antarktika; doklady komissii,* 1985, No.24, p.43-49, In Russian. 10 refs.
Kamenev, E.N.
Glacial geology, Antarctica—Antarctic Peninsula.
A scheme of the structural ruptures and tectonic folds of the southeastern area of the Antarctic Peninsula is presented. The method used in the interpretation of Landsat images is described as showing the geological contours under the ice sheets.

39-2893
Geological interpretation of satellite photographs of antarctic mountain regions. [Osobennosti geologicheskogo deshifrirovaniia kosmicheskikh fotosnimkov gornykh raĭonov Antarktidy],
Bud'ko, V.M., *Antarktika; doklady komissii,* 1985, No.24, p.50-55, In Russian.
Glacier beds, Glacial geology, Glacier surfaces, Photointerpretation.
The use of satellite photographs of the continental ice cover for the determination of the geological structure of glacier beds is discussed. The ice surface topography is classified according to its relationship with the topography of the subglacial terrain and the geological structure of the area.

39-2894
Possible impact of sheet glaciation on the thermodynamic regime of the antarctic Earth crust and its neotectonic evolution. [O vozmozhnom vliianii pokrovnogo oledeneniia na termodinamicheskiĭ rezhim zemnoĭ kory Antarktidy i na ee neotektonicheskuiu evolutsiiu],
Kadmina, I.N., et al, *Antarktika; doklady komissii,* 1985, No.24, p.56-64, In Russian. 11 refs.
Kurinin, R.G.
Tectonics, Glacial geology.
A study of ice cover effects on the thermodynamics of the continental lithosphere is presented. The peculiarities of crustal fragmentation related to temperature increase in the development of the lithosphere, and the consequences of the rapid decrease of ice load, are described.

39-2895
Possibility of joint application of nivometric and stratigraphic methods of measuring accumulation for more accurate determination of accumulation rate in the central areas of Antarctica. [Vozmozhnosti sovmestnogo primeneniia snegomernogo i stratigraficheskogo metodov izmereniia akkumuliatsii dlia utochneniia skorosti pitaniia tsentral'nykh raĭonov Antarktidy],
Diurgerov, M.B., et al, *Antarktika; doklady komissii,* 1985, No.24, p.82-86, In Russian. 4 refs.
Korolev, P.A.
Snow accumulation, Snow stratigraphy.
The paucity of yearly accumulation and redistribution of drift snow in central Antarctica is discussed, and the fact that the determination of yearly layers is only possible when using snow-measuring poles is pointed out; stratigraphic and isotopic methods alone do not provide this data. The advantages of using both methods are described, and calculations of the thickness of yearly layers are presented based on stratigraphic data and on snow accumulation measurements obtained with more than 500 poles between Vostok Station and Dome C.

39-2896
Use of snow airfields in Antarctica for determination of accumulation rate and atmospheric precipitation. [Ispol'zovanie snezhnykh aerodromov Antarktidy dlia opredeleniia skorosti akkumuliatsii i kolichestva atmosfernykh osadkov],
Diurgerov, M.B., et al, *Antarktika; doklady komissii,* 1985, No.24, p.87-93, In Russian. 6 refs.
Korolev, P.A.
Snow roads, Runways, Precipitation (meteorology), Antarctica—Vostok Station, Antarctica—Mirnyy Station.
Determination of yearly snow accumulation rate from snow cores obtained on airfields at Mirnyy and Vostok stations is described, and results for the years 1955-1981 are tabulated. Snow and firn structure at Mirnyy Station is also shown.

39-2897
Density and rheological properties of glacier ice. [Plotnost' lednikovogo l'da i ego reologicheskie svoĭstva],
Salamatin, A.N., et al, *Antarktika; doklady komissii,* 1985, No.24, p.94-106, In Russian. 30 refs.
Lipenkov, V.IA., Smirnov, K.E., Zhilova, IU.V.
Ice deformation, Rheology, Ice crystals, Ice models, Glacier ice, Bubbles, Ice structure, Antarctica—Vostok Station.
The recrystallization process of glacier ice formation, observed in vertical profiles of ice layers 1414 m thick in a borehole at Vostok Station, showed 5 stages: snow, firn, compression of air inclusions, air decomposition, and pure, polycrystalline ice. A mathematical model of the compression processes of glacier ice with gas bubbles is presented.

39-2898
Formation of chemical composition of lake waters in the periglacial zone of East Antarctica. [Osobennosti formirovaniia khimicheskogo sostava vod ozer v periglatsial'noĭ zone Vostochnoĭ Antarktidy],
Shmideberg, N.A., et al, *Antarktika; doklady komissii,* 1985, No.24, p.107-127, In Russian. Refs. p.126-127.
Bardin, V.I.
Limnology, Meltwater, Chemical composition, Antarctica—East Antarctica.
Investigations carried out over a period of 10-15 years show the following: the chemical composition of lake waters at the foot of glaciers in East Antarctica consists basically of two types, the sulfate type and the chloride type; high concentrations of these elements in the majority of lakes are of atmospheric origin, the biological productivity is low, the salinity is related to the morphological measurements of the lakes and to their distance from the ocean.

39-2899
Examination of the feasibility for demonstration and use of radioluminescent lights for Alaskan remote runway lighting.
Jensen, G., et al, *Alaska. Department of Transportation and Public Facilities. Division of Planning. Report,* Jan. 1984, AK-RD-84-16, 73p. + appends., 44 refs.
Leonard, L., Perrigo, L., Hegdal, L.
Runways, Markers, Luminescence, Cold tolerance, Coatings, Military operation, United States—Alaska.

39-2900
Environmental guidelines; pits and quarries.
MacLaren Plansearch, Ottawa, Canada, Indian and Northern Affairs, 1982, 69p., 11 refs.
Permafrost distribution, Frozen ground, Pits (excavations), Quarries, Earthwork, Manuals, Environments, Sands, Gravel, Canada—Northwest Territories, Canada—Yukon Territory.

39-2901
RADARSAT—the challenge of daily satellite ice reconnaissance.
Shaw, E., IEEE International Conference on Communications, Philadelphia, June 13-17, 1982. Conference record, Vol.1, New York, Institute of Electrical and Electronics Engineers, 1982, p.1G.4.1-1G.4.6.
DLC TK5101.A1116a
Ice navigation, Ice forecasting, Remote sensing, Ice conditions, Sea ice distribution, Northwest Passage.

39-2902
Distribution and transport of hydrocarbons in surface sediments of the Alaskan Outer Continental Shelf.
Venkatesan, M.I., et al, *Geochimica et cosmochimica acta,* Nov. 1982, 46(11), p.2135-2149, Refs. p.2147-2148.
Kaplan, I.R.
Hydrocarbons, Ocean bottom, Bottom sediment, Geochemistry, Sediment transport, Distribution, Surface properties, Spectra, Marine deposits, United States—Alaska.

39-2903
Feature identification and location experiment.
Sivertson, W.E., Jr., et al, *Science,* Dec. 3, 1982, 218(4576), p.1031-1033, 5 refs.
Wilson, R.G., Bullock, G.F.
Remote sensing, Snow cover distribution, Ice cover, Cloud cover, Vegetation, Surface properties, Computer applications.

39-2904
On the reconstruction of Pleistocene ice sheets: a review.
Andrews, J.T., *Quaternary science reviews,* 1982, 1(1), p.1-30, Refs. p.27-30.
Ice sheets, Pleistocene, Paleoclimatology, Glacial geology, Models, Theories.

39-2905
Assessing the global meltwater spike.
Jones, G.A., et al, *Quaternary research,* Mar. 1982, 17(2), p.148-172, Refs. p.169-172.
Ruddiman, W.F.
Meltwater, Glacial geology, Paleoclimatology, Isotope analysis, Pleistocene, Sea water, Salinity.

39-2906
Fire and other disturbances of the forests in Mount Rainier National Park.
Hemstrom, M.A., et al, *Quaternary research,* July 1982, 18(1), p.32-51, Refs. p.50-51.
Franklin, J.F.
Forest fires, Avalanches, Mudflows, Ecosystems, Mountains, United States—Washington—Mount Rainier.

39-2907
Advances in heat pipe technology.
International Heat Pipe Conference, 4th, London, Sep. 7-10, 1981, Oxford, Pergamon Press, 1982, 818p., Refs. passim. For selected papers see 39-2908 through 39-2911.
Reay, D.A., ed.
Heat pipes, Thermodynamics, Heat capacity, Freeze thaw cycles, Icing, Countermeasures, Geothermal thawing, Ice prevention, Meetings.

39-2908
Test of a horizontal heat pipe deicing panel for use on marine vessels.
Matsuda, S., et al, International Heat Pipe Conference, 4th, London, Sep. 7-10, 1981. Proceedings. Advances in heat pipe technology. Edited by D.A. Reay, Oxford, Pergamon Press, 1982, p.3-10, 4 refs.
Heat pipes, Ship icing, Ice prevention, Countermeasures.

39-2909
Snow melting using heat pipes.
Tanaka, O., et al, International Heat Pipe Conference, 4th, London, Sep. 7-10, 1981. Proceedings. Advances in heat pipe technology. Edited by D.A. Reay, Oxford, Pergamon Press, 1982, p.11-23, 5 refs.
Heat pipes, Snow melting, Geothermal thawing, Heat capacity, Water supply, Underground pipelines, Soil temperature, Ice prevention, Tests.

39-2910
Heat transfer studies for heat pipe cooling and freezing of ground.
Vasil'ev, L.L., et al, International Heat Pipe Conference, 4th, London, Sep. 7-10, 1981. Proceedings. Advances in heat pipe technology. Edited by D.A. Reay, Oxford, Pergamon Press, 1982, p.63-71, 5 refs.
Vaaz, S.L., Grakovich, L.P., Sedelkin, V.M.
Heat pipes, Heat transfer, Soil freezing, Stefan problem, Cooling.

39-2911
Thermodynamic analysis of heat pipe operation.
Vasil'ev, L.L., et al, International Heat Pipe Conference, 4th, London, Sep. 7-10, 1981. Proceedings. Advances in heat pipe technology. Edited by D.A. Reay, Oxford, Pergamon Press, 1982, p.313-325, 9 refs.
Konev, S.V.
Heat pipes, Supercooling, Thermodynamics, Liquid phases, Temperature distribution, Moisture, Enthalpy, Capillarity.

39-2912
Creep of mountain permafrost: internal structure and flow of alpine rock glaciers.
Haeberli, W., *Zurich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1985, No.77, 142p. + map, With German summary. Refs. p.126-139.
Permafrost distribution, Frozen ground mechanics, Rock glaciers, Geomorphology, Glacier flow, Rheology, Ice creep, Seismic surveys, Soil creep, Ice structure, Mountain glaciers.

39-2913
Length of benchmark stabilization in permafrost. [O prodolzhitel'nosti stabilizatsii reperov v raĭonakh mnogoletnei merzloty],
Bogdanov, B.G., *Geodeziia i kartografiia,* Jan. 1985, No.1, p.23-25, In Russian. 7 refs.
Bench marks, Permafrost beneath structures, Artificial thawing.

39-2914
Passive microwave remote sensing for sea ice research.
U.S. National Aeronautics and Space Administration. Science Working Group for the Special Sensor Microwave Imager (SSM/I), Washington, D.C., NASA, Dec. 1984, 55p., Refs. p.52-55.
Sea ice distribution, Microwaves, Remote sensing, Ice conditions, Snow cover, Mass balance, Ice cover thickness, Seasonal variations.
This report summarizes how data gathered by remote sensors on satellites can be utilized for sea ice research, and describes how the brightness temperatures measured by a passive microwave imager can be converted to maps of total sea ice concentration, and to the areal fractions covered by first year and multiyear ice. Several ancillary observations, especially by means of automatic data buoys and submarines equipped with upward-looking sonars, are needed to improve the validation and interpretation of satellite data. The design and performance characteristics of the Navy's Special Sensor Microwave Imager, expected to be in orbit in late 1985, are described. It is recommended that data from that instrument be processed to a form suitable for research applications and archived in a readily accessible form. The report concludes with a description of the sea ice data products required for research purposes and recommendations for their archiving and distribution to the scientific community. With regard to the Antarctic, graphic and tabulated data are presented on southern sea ice concentration, formation of the Weddell polynya, and a 10-year time series, 1973-1983, of antarctic sea ice extent. (Auth. mod.)

39-2915
Research activities of West Germany in western Antarctica. [Die Forschungsaktivitäten der Bundesrepublik Deutschland in der Westantarktis],
Kohnen, H., *Natur und Museum,* Dec. 1981, 111(12), p.413-425, In German. 17 refs.
DLC QH5.S4
Ice sheets, Ice shelves, Ice mechanics, Glacial geology, Antarctica—Filchner Ice Shelf.
German expeditions in the Antarctic are briefly reviewed, as are the political and research conditions under the Antarctic Treaty. Maps of Antarctica and its surrounding waters and islands, profiles of the antarctic ice sheet, and a sketch of gondwanaland showing the tectonic drifting of Antarctica are provided. The antarctic climate and the mechanical and physical

ice properties studied on Filchner Ice Shelf are discussed and data are tabulated.

39-2916
Effects of soluble salts on the unfrozen water contents of the Lanzhou, P.R.C., silt.
Tice, A.R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1984, CR 84-16, 18p., ADA-152 825, 24 refs.
Zhu, Y., Oliphant, J.L.
Unfrozen water content, Saline soils, Loess, Soil water, Solubility, Temperature effects, Electrical resistivity.
Phase composition curves are presented for a typical saline silt from Lanzhou, P.R.C., and compared to some silts from Alaska. The unfrozen water content of the Chinese silt is much higher than that of the Alaskan silts due to the large amount of soluble salts present in the silts from China, which are not present in silt from interior Alaska. When the salt is removed, the unfrozen water content is then similar for both the Chinese and Alaskan silt. Here we introduce a technique for correcting the unfrozen water content of partially frozen soils due to high salt concentrations. We calculate the equivalent molality of the salts in the unfrozen water at various temperatures from a measurement of the electrical conductivity of the extract from saturated paste.

39-2917
Change in orientation of artillery-delivered anti-tank mines in snow.
Bigl, S.R., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1984, CR 84-20, 20p., ADA-090 946, 5 refs.
Military operation, Tanks (combat vehicles), Snow cover effect, Orientation, Temperature effects, Tests.
The Remote Anti-Armor Mine System (RAAMS) employs scatterable mines that are delivered by ejection from a projectile during flight. A problem with delivery of RAAMS mines in snow arises because a percentage of them are equipped with an anti-disturbance mechanism. The natural disturbance or tilting of the mines while melting into the snow on a warm or sunny day may cause them to detonate. Five tests lasting 3 hours to 5 days were conducted at CRREL to study change in orientation of RAAMS mines after landing in snow. Mines were set in the snow at various repose angles and their orientations were recorded periodically. The tests indicated that a critical angle of approximately 65 deg from horizontal divides the settlement patterns of the mines. Those with initial repose angles below 65 deg will tend towards 0 deg, while more steeply dipping mines will most often come to rest in a vertical position. Angular change rates during midday hours (0900-1500) ranged from 0 deg to 10 deg per hour. On sunny days with near-freezing temperatures, most mines had a total one-day change of 10 deg to 25 deg. From these tests, it appears that many of the mines would have detonated if they had been equipped with an anti-disturbance mechanism.

39-2918
Detection of buried utilities. Review of available methods and a comparative field study.
Bigl, S.R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1984, CR 84-31, 36p., ADB-090 068L, 21 refs.
Henry, K.S., Arcone, S.A.
Underground facilities, Utilities, Detection, Frost penetration, Magnetic surveys, Geophysical surveys, Earthwork.
Locating buried utilities is often necessary for repair, servicing, or prevention of damage when earthwork is to be conducted in a particular area. Of the many methods available for detection of buried utilities, those in most wide-spread use are magnetic induction, magnetometry, and radiofrequency tracking. Comparative field tests of 11 locators using these three operating methods were conducted in Hanover, New Hampshire, and eight of these were further tested at the U.S. Military Academy, West Point, New York, and the Stewart Army Subpost, Newburgh, New York. At West Point and Newburgh, the nine sites included a variety of utility types including iron and steel pipe, cable, vitreous tile and plastic, as well as different terrain and groundcover characteristics. Tests with the radiofrequency tracking locators were insufficient to evaluate their ability to locate nonmetallic pipe or to judge if one locator was superior to the other. Although not statistically different, slightly more accurate average readings were obtained with the magnetic induction and magnetometer instruments over cable than over pipe. Shallow utilities (< 3.5 ft) were located slightly more accurately than deeper ones. In general, the low- to mid-priced magnetic induction locators appeared to be the most cost effective. Problems with accuracy in utility location occurred mainly at sites with steep topography or where utilities were in very close proximity. Successful operation of the instruments required only a small amount of training.

39-2919
Icebergs in the Strait of Belle Isle and approaches.
Calgary, Alberta, Pallister Resource Management, Ltd., [1982], 21p. + map, 3 refs.
Icebergs, Sea ice distribution, Meteorological data, Seasonal variations, Statistical analysis, Canada—Newfoundland, Labrador Sea.

39-2920
Probabilistic model for predicting the duration of levels of electromagnetic transmission in falling snow.
Dyer, R.M., *U.S. Air Force Geophysics Laboratory. Technical report*, Feb. 3, 1984, AFGL-TR-84-0047, AFGL-ERP-870, 33p. ADA-143 318/4.
Snow electrical properties, Snowfall, Electromagnetic properties, Wave propagation, Falling bodies, Military operation, Transmissivity, Mathematical models, Time factor, Infrared reconnaissance, Detection.

39-2921
Superstructure icing: non-suitability of current forecasting aids for Navy ships.
Jeck, R.K., *U.S. Naval Research Laboratory. Report*, July 5, 1984, NRL-MR-5377, 16p. ADA-143 304/4.
Sea spray, Ship icing, Superstructures, Ice formation, Ice accretion, Sea water, Forecasting, Wind factors, Computer applications.

39-2922
Arctic Pilot Project.
Sinclair, G.W., *Bureau Veritas. Bulletin technique. English issue*, Jan. 1984, 13(1), p.10-14.
Ice navigation, Marine transportation, Research projects, Liquefied gases, Pipelines, Canada.

39-2923
Canadian shipbuilding and offshore and Arctic prospects.
Walsh, H.M., *Bureau Veritas. Bulletin technique. English issue*, Jan. 1984, 13(1), p.15-18.
Offshore structures, Ships, Exploration, Canada.

39-2924
Radar measurements of snowcover thickness.
Bogorodskiĭ, V.V., et al, *Soviet physics. Technical physics*, May 1984, 29(5), p.598-599, Translated from Zhurnal tekhnicheskoĭ fiziki, May 1984 54(5). 2 refs.
Pozniak, V.I.
Snow depth, Measuring instruments, Remote sensing.
Two methods are currently employed to measure snowcover thickness: planting fixed gauges in the snow, or scooping the snow up from the ground and measuring the volume. A new method, demonstrated in 1981 in studies of the structure and thickness of snow strata on the surface of an antarctic glacier, is reviewed. Experiments show that radar also provides an effective method for measuring snowcover thickness at moderate latitudes.

39-2925
Trapping of xenon in ice: implications for the origin of Earth's noble gases.
Wacker, J.F., et al, *Geochimica et cosmochimica acta*, Nov. 1984, 48(11), p.2373-2380, Refs. p.2379-2380.
Anders, E.
Artificial ice, Ice sheets, Ice composition, Atmospheric composition.
Although the earth's atmosphere contains Ne, Ar, and Kr in about C1,2-chondrite proportions, Xe is depleted about 20-fold. To test the suggestion that the 'missing' Xe is trapped in antarctic ice, distribution coefficients have been measured for Xe in artificially formed frost at -20 to -60 deg C, using Xe-127 tracer. The values are 0.098 cc STP/g atm for trapping and <5 cc STP/g atm for trapping plus adsorption. If these results are representative of natural ice, then the antarctic ice cap contains less than 1% of the atmospheric Xe inventory, or < 1/1,000 the amount needed for a C1,2-chondrite pattern. (Auth. mod.)

39-2926
Pu-240/Pu-239 ratio, a potential geochronometer.
Koide, M., et al, *Earth and planetary science letters*, Jan. 1985, 72(1), p.1-8, 14 refs.
Bertine, K.K., Chow, T.J., Goldberg, E.D.
Fallout, Ice composition, Ice sheets.
The arctic and antarctic ice sheets maintain records of the atmospheric fallout in their datable strata. The Pu-240/Pu-239 ratios in these polar reservoirs uniquely distinguish particulate fallout from the pre-moratorium nuclear atmospheric weapons tests, dominated by the U.S., and the post-moratorium atmospheric weapons tests, dominated by the USSR. Thus, they offer the possibility of use as a geochronological tool for some marine, glacial, lacustrine and soil systems. (Auth.)

39-2927
Record of global pollution in polar snow and ice.
Wolff, E.W., et al, *Nature*, Feb. 14-20, 1985, 313(6003), p.535-540, 122 refs.
Peel, D.A.
Fallout, Ice cores, Ice composition, Bubbles, Ice sheets, Pollution, Antarctica.
Studies on polar snow and ice show evidence for a twofold increase in the concentration of methane in the atmosphere over the period since 1650, but its interpretation in terms of increases in sources under human control is still controversial. A pre-industrial CO_2 concentration of 260 p.p.m.v. has been determined, compared with a present-day concentration of 340 p.p.m.v. The pre-industrial value is significantly smaller than that assumed until recently in models of CO_2-induced warming of the atmosphere. Concentrations of sulphate and nitrate in Greenland snow have increased threefold and twofold, respectively, in the last century. In contrast, no recent increases have been detected for these acidic species in Antarctica. This reflects the geographical pattern of industrial emissions and the restricted movement of tropospheric aerosols between the hemispheres. Similarly, much larger surface snow concentrations of heavy metals are found in Greenland than in Antarctica.

39-2928
Thickness of ice on perennially frozen lakes.
McKay, C.P., et al, *Nature*, Feb. 14-20, 1985, 313(6003), p.561-562, 28 refs.
Clow, G.D., Wharton, R.A., Jr., Squyres, S.W.
Lake ice, Limnology, Ice thermal properties, Ice water interface, Ice cover thickness, Antarctica—Victoria Land.
The dry valleys of southern Victoria Land, constituting the largest ice free expanse in the Antarctic, contain numerous lakes whose perennial ice cover is the cause of some unique physical and biological properties. Although the depth, temperature and salinity of the liquid water varies considerably from lake to lake, the thickness of the ice cover is remarkably consistent, ranging from 3.5 to 6 m, which is determined primarily by the balance between conduction of energy out of the ice and the release of latent heat at the ice-water interface and is also affected by the transmission and absorption of sunlight. In the steady state, the release of latent heat at the ice bottom is controlled by ablation from the ice surface. Here we present a simple energy-balance model, using the measured ablation rate of 30 cm/yr, which can explain the observed ice thickness. (Auth.)

39-2929
Winter ecology of small mammals.
Merritt, J.F., ed, *Carnegie Museum of Natural History. Special publication*, Dec. 1984, No.10, 380p., Refs. passim. For selected papers see 39-2930 through 39-2934.
Ecology, Snow cover effect, Light transmission, Animals, Plant ecology, Frost penetration, Microclimatology, Environments.

39-2930
Materials and methods of subnivean sampling.
Schmid, W.D., *Carnegie Museum of Natural History. Special publication*, Dec. 1984, No.10, Winter ecology of small mammals, edited by J.F. Merritt, p.25-32, 44 refs.
Frost penetration, Snow cover effect, Microclimatology, Ecology, Air temperature, Environments, Animals, Heat flux, Atmospheric composition, Snow depth.

39-2931
Light extinction under a changing snowcover.
Marchand, P.J., *Carnegie Museum of Natural History. Special publication*, Dec. 1984, No.10, Winter ecology of small mammals, edited by J.F. Merritt, p.33-37, 11 refs.
Snow optics, Light transmission, Snow density, Snow cover effect, Ice crystal growth, Refraction, Porosity, Solar radiation.

39-2932
Light conditions and plant growth under snow.
Salisbury, F.B., *Carnegie Museum of Natural History. Special publication*, Dec. 1984, No.10, Winter ecology of small mammals, edited by J.F. Merritt, p.39-50, 31 refs.
Snow optics, Light transmission, Soil temperature, Thermal conductivity, Plant ecology, Snow cover effect, Growth, Environments.

39-2933
Plant production and its relation to climatic conditions and small rodent density in Kilpisjärvi region (69 deg. 05 min. N, 20 deg. 40 min. E), Finnish Lapland.
Eurola, S., et al, *Carnegie Museum of Natural History. Special publication*, Dec. 1984, No.10, Winter ecology of small mammals, edited by J.F. Merritt, p.121-130, 35 refs.
Kyllönen, H., Laine, K.
Plant ecology, Plant physiology, Climatic factors, Snow cover effect, Biomass, Heat balance, Animals.

39-2934
Subnivean accumulation of CO_2 and its effects on winter distribution of small mammals.
Penny, C.E., et al, *Carnegie Museum of Natural History. Special publication*, Dec. 1984, No.10, Winter ecology of small mammals, edited by J.F. Merritt, p.373-380, 31 refs.
Pruitt, W.O., Jr.
Atmospheric composition, Snow cover effect, Carbon dioxide, Taiga, Animals, Subglacial observations.

39-2935
***Cryoprotective effect of dimethyl sulfoxide* (DMSO) on soil structure during freeze-drying.**
Keng, J.C.W., et al, *Soil Science Society of America Journal*, Mar.-Apr. 1985, 49(2), p.289-293, 18 refs.
Morita, H., Ramia, N.T.
Freeze drying, Ice crystal growth, Soil structure, Porous materials, Admixtures, Chemical analysis, Tests.

39-2936
Surface premelting.
Nenow, D., *Progress in crystal growth and characterization*, 1984, 9(3/4), p.185-225, 103 refs.
Ice crystal growth, Ice melting, Molecular structure, Ice crystal structure, Surface roughness, Nuclear magnetic resonance, Diffusion, Models.

39-2937
Further theoretical studies of the role of splintering in cumulus glaciation.
Koenig, L.R., et al, *Royal Meteorological Society. Quarterly journal*, Oct. 1984, 110(466), p.1121-1141, 27 refs.
Murray, F.W.
Supercooled clouds, Ice crystal nuclei, Ice crystal growth, Cloud droplets, Liquid phases, Particles, Ice crystal formation, Nucleating agents, Temperature effects.

39-2938
Mobile concrete production platform for the Beaufort Sea. [Plate-forme mobile d'exploitation en béton pour la mer de Beaufort],
Valenchon, C., *Bureau Veritas. Bulletin technique*, Dec. 1983, 65(12), p.820-827, In French.
Offshore structures, Artificial islands, Ice conditions, Concrete structures, Construction materials, Logistics, Platforms.

39-2939
Artificial islands. [Iles artificielles],
Putot, C., *Bureau Veritas. Bulletin technique*, Dec. 1983, 65(12), p.828-833, In French.
Artificial islands, Offshore structures, Ice conditions, Ice islands, Ice loads, Icebergs, Countermeasures.

39-2940
Ships for Arctic waters. [Navires pour les eaux arctiques],
Beghin, D., *Bureau Veritas. Bulletin technique*, Dec. 1983, 65(12), p.842-850, In French.
Ice navigation, Ships, Route survey, Ice conditions, Ice solid interface, Ice floes, Icebergs, Canada.

39-2941
Design of an Arctic merchant ship. [La conception d'un navire de commerce arctique],
Bonmort, J., et al, *Bureau Veritas. Bulletin technique*, Dec. 1983, 65(12), p.851-860, In French. 16 refs.
Vivier, F.
Ice navigation, Ships, Design, Ice conditions, Sea ice.

39-2942
Technigaz project of an icebreaker methane carrier with membrane tanks. [Projet Technigaz de navire méthanier brise-glace à réservoirs membrane],
Pauthier, J., *Bureau Veritas. Bulletin technique*, Dec. 1983, 65(12), p.861-865, In French.
Ice navigation, Tanker ships, Liquefied gases, Marine transportation, Ships.

39-2943
Hull scantling of large merchant icebreakers. [Echantillonnage de la poutre-navire des grands brise-glace marchands],
Huther, M., et al, *Bureau Veritas. Bulletin technique*, Dec. 1983, 65(12), p.866-878, In French. 5 refs.
Baudin, M., Parmentier, G.
Icebreakers, Ice navigation, Ice breaking, Design, Marine transportation.

39-2944
Proceedings, Vol.1.
Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1984, SR 84-35, 433p., ADB-090 935, Refs. passim. For individual papers see 39-2945 through 39-2981.
Snow physics, Snowfall, Transmissivity, Military operation, Snowflakes, Scattering, Smoke generators, Aerosols, Meetings, Reflectivity, Remote sensing, Spectra.

39-2945
Validation and analysis of SNOW-ONE-A transmission data.
Persky, M.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.9-24, ADB-090 935, 13 refs.
Gallery, W.O.
Transmissivity, Snowflakes, Light scattering, Snowfall, Wave propagation, Spectra, Falling bodies, Measuring instruments.

39-2946
Millimeter wave transmission fluctuations due to snow.
Bohlander, R.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.25-39, ADB-090 935, 14 refs.
Wave propagation, Snowfall, Transmission, Acoustics, Snowflakes, Transmissivity, Falling bodies, Measuring instruments.

39-2947
Attenuation and backscatter for snow and sleet at 96, 140, and 225 GHz.
Nemarich, J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, MP 1864, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.41-52, ADB-090 935, 3 refs.
Wellman, R.J., Gordon, B.E., Hutchins, D.R., Turner, G.A., Lacombe, J.
Attenuation, Snowflakes, Backscattering, Ice crystals, Wave propagation, Snowfall, Rain, Transmission, Meteorological factors.
Measurements are reported for attenuation and backscatter at 96, 140, and 225 GHz for falling snow and for mixed snow, sleet, and rain. The measurements were made with the Harry Diamond Laboratories Near-Millimeter Wave Mobile Measurement Facility at the SNOW-TWO Test at Grayling, MI, during the winter of 1983-1984. The dependence of the attenuation and backscatter levels on frequency, snow mass concentration, and ground-level air temperature are discussed. Measurements dade at 96 GHz with various combinations of transmitter and receiver polarizations showed no polarization-related effects on the attenuation or backscatter levels.

39-2948
SMART measurements at SNOW-TWO.
Crow, S.B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.53-72, ADB-090 935, 3 refs.
Snowflakes, Transmission, Light scattering, Spectra, Wave propagation, Snow optics, Measuring instruments, Snowfall.

39-2949
Crystal growth in ice and snow.
Alley, R.B., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.73-74. ADB-090 935.
Ice crystal growth, Snow crystal growth, Impurities, Firn.

39-2950
Catalog of smoke/obscurant characterization instruments.
O'Brien, H.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, MP 1865, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.77-82. ADB-090 935.
Bowen, S.L.
Wave propagation, Transmission, Air pollution, Electrical measurement, Attenuation, Optical properties, Snowflakes, Aerosols, Dust, Measuring instruments, Radiometry, Backscattering.
The requirement for improved quantification of obscuration parameters is generally recognized by those who attempt to measure, evaluate or predict electro-optical system performance during periods of adverse transmission conditions. A broad spectrum of measurement devices, ranging from simple to extremely sophisticated, are presently in use for making obscurant measurements. To minimize duplication of effort and to help disseminate information on the current status of instrumentation, the Project Manager for Smoke/Obscurants tasked the U.S. Army Cold Regions Research and Engineering Laboratory with initiating a catalog of instrumentation currently used by government agencies and their contractors to make obscuration measurements.

39-2951
Scattering properties of falling snow.
Mill, J.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.83-87, ADB-090 935, 4 refs.
Davidson, G.
Wave propagation, Scattering, Snowfall, Backscattering, Snowflakes, Transmission.

39-2952
Particle size and optical turbulence measurements in a snow environment.
Olsen, R.O., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.89-94, ADB-090 935, 3 refs.
Snowfall, Optical properties, Transmission, Snowflakes, Turbulent flow, Particle size distribution, Falling bodies, Snow optics, Refractivity, Measuring instruments, Snow cover effect, Scintillation.

39-2953
Snow characterization measurements from SNOW-TWO/Smoke Week VI.
Main, B.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.95-103, ADB-090 935, 8 refs.
Berthel, R.O.
Snowfall, Snow crystal structure, Snowflakes, Falling bodies, Velocity.

39-2954
Performance of microprocessor-controlled snow crystal replicator.
Koh, G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, MP 1866, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.107-111, ADB-090 935, 4 refs.
Snow crystal structure, Snowfall, Transmission, Electromagnetic properties, Snowflakes, Ice crystal replicas, Artificial snow.
Changes in snow crystal characteristics during snowstorms are frequently observed. A continuous record of these changes is required to study the effect of airborne snow on the transmission properties of electromagnetic energy. A continuous snow crystal replicator suitable for this task has been developed and was field- tested at the SNOW II exercise. This replicator, which employs a Formvar technique for snow crystal replication developed by Schaefer (1956) possesses electronic and mechanical features previously unavailable in other replicators and represents a significant improvement in Formvar replication technique. A microprocessor controls the operation of the replicator, resulting in improved quality of snow crystal replicas as well as a decrease in data reduction time. This is accomplished by 1) regulating the temperature of a heater bar designed to reduce blushing (condensed moisture on the film which obscures the detailed structures of replicated crystals), 2) ensuring uniform thickness of the Formvar coating by adjusting the flow rate according to film speed, 3) encoding time on the film, and 4) monitoring motion of the film to ensure proper operation of the replicator. A description of this instrument is presented and details of its operation at SNOW II are discussed.

39-2955
System for the point measurement of airborne snow extinction coefficient.
Hutt, D.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.113-120. ADB-090 935.
Bissonnette, L.
Snowfall, Snowflakes, Scattering, Transmission, Optical properties, Infrared radiation, Falling bodies, Volume.

39-2956
Snowpack ground truth measurements: 1. Overview.
Gimmestad, G.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.123-137, ADB-090 935, 3 refs.
Lee, S.M.
Snow temperature, Snow cover structure, Military operation, Snow water content, Radar echoes, Snow surface, Snow crystals, Snow physics, Tracked vehicles, Snow density, Metamorphism (snow), Grain size, Meteorological factors.

39-2957
Snowpack ground truth measurements: 2. Snow surface characterization.
Gimmestad, G.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.139-151, ADB-090 935, 2 refs.
Lee, S.M., Bolio, L.H.
Snow surface, Radar echoes, Snow temperature, Snow water content, Surface roughness, Wave propagation, Tracked vehicles, Measuring instruments.

39-2958
Snowpack ground ..uth measurements: 3. Snowpack profile characterization.
Harrison, W.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.153-160, ADB-090 935, 2 refs.
Snow cover, Snow density, Snow temperature, Metamorphism (snow), Grain size, Snow depth, Meteorological data, Profiles, Measuring instruments.

39-2959
New method for measuring the snow-surface temperature.
Andreas, E.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, MP 1867, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.161-169, ADB-090 935, 5 refs.
Snow surface temperature, Humidity, Hygrometers, Dew point, Surface roughness, Meteorological data, Thermistors, Analysis (mathematics).
Because of the tenuousness of a snow cover, measuring its surface temperature is not easy. The surface is ill-defined and easily disturbed; invasive transducers commonly used for other surfaces may thus be inappropriate for snow. A hygrometric method is described for measuring the snow-surface temperature; the advantages are that it is non-invasive and non radiative and that it depends only weakly on the surface structure. The key assumption is that air at a snow surface is in saturation with the snow; the dew-point temperature of the air is thus T(s), the surface temperature. Consequently, under the right conditions, by measuring the dew-point temperature 10 cm above the surface, we, in effect, measure the surface temperature.

39-2960
***Overview* of meteorological and snow cover characterization at SNOW-TWO.**
Bates, R.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, MP 1868, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.171-191, ADB-090 935, 6 refs.
O'Brien, H.W.
Snow cover distribution, Snow physics, Meteorological data, Military operation, Snow depth, Snow density, Unfrozen water content, Temperature distribution, Grain size, Tests.
The performance of military airborne down-look systems, regardless of wavelength, depends upon the recognition of differences between target and background features as viewed through an intervening medium. In cold regions the background may consist partially or entirely of snow cover during winter months. Prediction or evaluation of system performance under such conditions requires detailed characterization of snow cover, meteorological situation and, in some cases, subsurface features such as soil. This paper presents a brief overview of meteorological and snow cover background measurements made at Camp Grayling, Michigan, during SNOW-TWO. Eight independent system tests were supported, each of which required meteorological and/or snow-cover "ground-truth" characterization. Support was provided at four meteorological sites and seven snow cover characterization locations. Methodology is described briefly and a listing given of available data taken by CRREL in support of these tests.

39-2961
Comparison of millimeter-wavelength snowcover reflectivity with snow surface properties.
Williams, L.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.193-200, ADB-090 935, 7 refs
Gallagher, J.G.
Snow cover, Radar echoes, Wave propagation, Reflectivity, Scattering, Snow water content, Grain size, Porosity, Surface roughness.

39-2962
Dielectric measurements and modeling snow in the 3- to 37-GHz range.
Hallikainen, M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.201-220, ADB-090 935, 32 refs.
Ulaby, F.T., Abdelrazik, M.
Microwaves, Snow electrical properties, Snow physics, Snow water content, Dielectric properties, Mathematical models, Snow density, Snow temperature, Snow crystals, Scattering.

39-2963
Backscatter from snow at mm wavelengths.
Branscum, J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.221-231, ADB-090 935, 6 refs.
Snow electrical properties, Backscattering, Microwaves, Radar echoes, Electromagnetic properties, Surface roughness, Reflection.

39-2964
Extinction models for falling snow, blowing snow, and snow with fog.
Seagraves, M.A., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.235-245, ADB-090 935, 16 refs.
Snowfall, Scattering, Electromagnetic properties, Transmission, Snowflakes, Falling bodies, Mathematical models, Infrared radiation, Fog, Blowing snow.

39-2965
Approach to snow propagation modeling.
Koh, G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, MP 1869, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.247-259, ADB-090 935, 9 refs.
Snowfall, Transmissivity, Attenuation, Snow crystal structure, Solar radiation, Particle size distribution, Electromagnetic properties, Mathematical models, Falling bodies, Infrared radiation, Radiation absorption.
The attenuation of electromagnetic energy transmitted through falling snow can be determined if sufficient information regarding the physical and optical properties of airborne snow is known. Due to the complex and dynamic nature of falling snow the necessary parameters to predict transmission are often difficult to measure. Therefore it is necessary to carefully evaluate all the snow properties that are measurable in order to identify some ideal set of snow parameters that can be used to adequately model transmission through falling snow. A basic quantitative measurement of falling snow that can be continuously monitored is the mass concentration. Thus an approach to modeling transmittance through airborne snow using mass concentration as one of the inputs should be thoroughly investigated. This paper explores a potential method of predicting transmittance based on mass concentration measurement, taking into consideration the size and shape of the snow crystals. Although the paper focuses on visible radiation the concepts discussed are also applicable to infrared radiation.

39-2966
Forward-scattering corrected extinction by nonspherical particles.
Bohren, C.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, MP 1870, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.261-271, ADB-090 935, 16 refs.
Koh, G.
Snow crystal structure, Light scattering, Snowflakes, Wave propagation, Particles, Analysis (mathematics).
Measured extinction of light by particles, especially those much larger than the wavelength of the light illuminating them, must be corrected for forward scattered light collected by the detector. Near-forward scattering by arbitrary nonspherical particles is, according to Fraunhofer diffraction theory, more sharply peaked than that by spheres of equal projected area. The difference between scattering by a nonspherical particle and that by an equal-area sphere is greater the more diffusely the particle's projected area is distributed about its centroid. Snowflakes are an example of large atmospheric particles that are often highly nonspherical. Calculations of the forward-scattering correction to extinction by ice needles have been made under the assumption that they can be approximated as randomly oriented prolate spheroids (aspect ratio 10:1). The correction factor can be as much as 20% less than that for equal-area spheres depending on the detector's acceptance angle and the wavelength. Randomly oriented oblate spheroids scatter more nearly like equal-area spheres.

39-2967
Test of the Holt approximation for forward scattering of millimeter waves by stellar dendrites.
Goedecke, G.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.273-277, ADB-090 935, 7 refs.
O'Brien, S.G.
Dendritic ice, Scattering, Snowflakes, Snow crystal structure, Particles, Theories.

39-2968
Millimeter wave extinction and cross-polarization by stellar dendrites.
O'Brien, S.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.279-288, ADB-090 935, 6 refs.
Goedecke, G.H.
***Dendritic ice, Scattering, Snow crystal structure,* Snowflakes, Wave propagation, Analysis (mathematics).**

39-2969
Analysis of helicopter snow obscuration sub-test at SNOW-TWO.
Ebersole, J.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.289-310, ADB-090 935, 38 refs.
Cheng, W.K., Vaglio-Laurin, R.
Transmissivity, Snowfall, Snowflakes, Helicopters, Blowing snow, Wind velocity, Supercooled clouds, Mathematical models.

39-2970
Helicopter-lofted snow model for EOSAEL.
Burlbaw, E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.311-322, ADB-090 935, 20 refs.
Seagraves, M.A.
Transmissivity, Snow models, Snowfall, Blowing snow, Helicopters, Visibility, Velocity, Falling bodies, Wind velocity, Analysis (mathematics).

39-2971
***Discrete reflections from thin* layers of snow and ice.**
Jezek, K.C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, MP 1871, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.323-331, ADB-090 935, 11 refs.
Clay, C.S.
Remote sensing, Snow physics, Ice physics, Reflection, Radar echoes, Wave propagation, Snow acoustics, Ice acoustics, Electromagnetic properties.
A new approach was developed for computing the impulse response of a layered material. Our approach is different from other formulations in that we rely on a simple algorithm for polynomial division rather than the usual and more cumbersome matrix schemes. Our model is strictly valid for normally incident plane waves and does not allow for dispersion in a lossy material but we can account for geometrical spreading and believe the technique can be adapted for oblique incidence. The advantages of our technique are simplicity and the impulse nature of the solution. Consequently, we can compute the band limited response of the layered material through a straightforward convolution of the impulse response with any desired source function. In this paper, we outline the method and discuss examples of radar waves reflected from layers of snow and ice. We suggest the method may be a convenient tool for modelers studying acoustic and electromagnetic reflections from snow and ice cover.

39-2972
Effect of Lake Michigan on a surface synoptic low.
Clark, D., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.335-345, ADB-090 935, 16 refs.
Storms, Lake water, Synoptic meteorology, Atmospheric disturbances, Air water interactions, Winter, Weather observations, United States—Michigan, Lake.

39-2973
Explosive obscuration sub-test results at the SNOW-TWO field experiment.
Ebersole, J.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Dec. 1984, SR 84-35, MP 1872, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.347-354, ADB-090 935.
Williams, R.R., Bates, R.E.
Transmissivity, Explosives, Snow cover, Ice cover, Visibility, Attenuation, Time factor, Explosion effects, Sands, Tests.
A series of explosive obscuration trials was conducted in January 1984 as a sub-test to the SNOW-TWO field experiment conducted in Grayling, MI. In this paper, a discussion is presented of the time space-dependent obscuration effects produced by explosives detonated on snow ice ground cover. In addition, time space-dependent thermal signatures of the resulting craters are presented.

39-2974
Tank thermal image suppression by insulation of the crew compartment and crew heaters exhaust.
Tedeschi, M., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.357-370, ADB-090 935, 4 refs.
Tanks (combat vehicles), Infrared radiation, Thermal effects, Thermal insulation, Cold weather operation, Military equipment, Countermeasures, Heating, Air temperature.

39-2975
XM-836 (SADARM) winter sensor tests, Grayling, Michigan.
Bauerle, D.G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.375-377. ADB-090 935.
Military research, Military equipment, Snow cover effect, Cold weather operation, Radar echoes, Radiometry, Tests, Detection.

39-2976
Radar backscatter studies at SNOW-TWO.
Knox, J.E., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.379-387. ADB-090 935.
Radar echoes, Backscattering, Military equipment, Snow surface, Detection, Snow cover effect, Scattering.

39-2977
3 to 5 micron staring array sensor performance in a cold background and against obscurants.
Lamboley, W.R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.391-395, ADB-090 935, 1 ref.
Blackwell, J.D., Kopala, E.W., Stockum, L.A.
Military equipment, Cold weather operation, Infrared equipment, Detection, Measuring instruments, Fog, Smoke.

39-2978
Comparison of smoke and obscurant microscale physical characteristics in summer and winter environments.
Farmer, W.M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.399-403, ADB-090 935, 3 refs.
Stallings, E.S., Schwartz, F.A., Krist Dietz, K.L.
Light transmission, Particle size distribution, Optical phenomena, Smoke generators, Winter, Spectra.

39-2979
Smoke Week VI/SNOW-TWO observations.
Ebersole, J.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.405-407. ADB-090 935.
Klimek, W.
Snowfall, Snowflakes, Photographic reconnaissance, Smoke generators, Chemical composition, Visibility, Telemetering equipment.

39-2980
Snow chemistry of obscurants released during SNOW-TWO/Smoke Week VI.
Cragin, J.H., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, MP 1873, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.409-416. ADB-090 935.
Smoke generators, Snow composition, Chemical analysis, Snowfall, Infrared radiation, Visibility, Particle size distribution, Aerosols.

39-2981
Modeling the effects of a cold environment on screening smokes.
Matise, B.K., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-35, Snow Symposium, 4th, Hanover, NH, Aug. 14-16, 1984. Proceedings, Vol.1, p.417-433, ADB-090 935, 17 refs.
Transmissivity, Smoke generators, Snow cover effect, Chemical analysis, Models, Temperature effects, Humidity, Fog, Telemetric equipment.

39-2982
Methods of removing naleds from walls of wells drilled for the columnar piers of railroad bridges. [Sposoby udaleniia naledeĭ so stenok skvazhin probu-rennykh pod stolbchatye opory mostov BAM],
Tsar'kov, A.A., et al, *Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy*, 1980, No.672, p.114-123, In Russian.
Kostiaev, A.P.
Bridges, Piers, Naleds, Baykal Amur railroad, Permafrost beneath structures, Permafrost hydrology.

39-2983
Landscape-ecologic approach to comparative analysis of two local floras of Chukotskiy Peninsula. [O landshaftno-ekologicheskom podkhode k sravnitel'nomu analizu flor (na primere dvukh konkretnykh flor Chukotki)],
Kozhevnikov, IU.P., *Botanicheskiĭ zhurnal*, Mar. 1985, 70(3), p.314-321, In Russian with English summary. 16 refs.
Tundra, Forest tundra, Plant ecology, Ecosystems, Subarctic landscapes.

39-2984
Using polynomial regression in studying photosynthesis of herbaceous plants in the Arctic and the taiga zone. [Issledovanie fotosinteza travianistykh rasteniĭ Arktiki i taezhnoĭ zony (s primeneniem polinomial'noĭ regressii)],
Kisliuk, I.M., et al, *Botanicheskiĭ zhurnal*, Feb. 1985, 70(2), p.169-179, In Russian with English summary. 26 refs.
Sheinina, G.A.
Tundra, Plant physiology, Taiga, Plant ecology, Soil temperature, Photosynthesis, Solar radiation, USSR—Wrangel Island.

39-2985
Primary productivity of Taymyr tundras. [Pervichnaia produktivnost' tundr Taĭmyra],
Pospelova, E.B., et al, *Botanicheskiĭ zhurnal*, Feb. 1985, 70(2), p.188-198, In Russian with English summary. Refs. p.197-198.
Vasil'evskaia, V.D.
Tundra, Vegetation patterns, Biomass, Plant ecology, Soil chemistry, Subarctic landscapes, Climatic factors.

39-2986
Alpine mossy larch forest of the Zeya State Reserve on the Tukuringra Range. [Gornye mokhovye listvennichniki v zeĭskom gosudarstvennom zapovednike (khrebet Tukuringra)],
Kuvaev, V.B., et al, *Botanicheskiĭ zhurnal*, Feb. 1985, 70(1), p.221-231, In Russian. 16 refs.
Stetsura, N.N.
Ecosystems, Forest soils, Taiga, Mosses, Slope orientation, Alpine landscapes, Protective vegetation, Plant ecology.

39-2987
Comparative utility of microwave and shortwave satellite data for all-weather charting of snow cover.
Robinson, D., et al, *Nature*, Nov. 29-Dec. 5, 1984, 312(5993), p.434-435, 16 refs.
Künzi, K., Kukla, G., Rott, H.
Snow cover distribution, Remote sensing, Microwaves, Brightness, Temperature effects, Meteorological charts.

39-2988
Stream-icing zones in Alaska.
Dean, K.G., *Alaska. Department of Natural Resources. Division of Geological Surveys. Report of investigations*, Dec. 1984, No.84-16, 20p. + map, 15 refs.
River ice, Streams, Remote sensing, Ice conditions, Icing, Ice sheets, Mapping, LANDSAT, United States—Alaska.

39-2989
Isotopic diffusion in cold snow and firn.
Whillans, I.M., et al, *Journal of geophysical research*, Apr. 20, 1985, 90(D2), p.3910-3918, Refs. p.3917.
Grootes, P.M.
Snow stratigraphy, Vapor diffusion, Ion diffusion, Firn stratification, Antarctica—Dome C.
Molecular mixing in cold snow and firn is ordinarily controlled by vapor diffusion. Diffusion through or along the ice matrix is slow, whereas diffusion from the air to within separate grains is comparatively rapid. Thus mixing occurs in the vapor phase, and exchange with the local ice involves all the water molecules. A quantification of these concepts is applied to the diffusion of oxygen-isotopic depth profiles in southern Greenland and at Dome C, Antarctica. It successfully describes the smoothing of measured profiles. The smoothing rate is strongly dependent on temperature and density of the firn.

39-2990
Reversible and continuous solidification processes in loose Quaternary sediments of North America. [Le Quaternaire à induration réversible et pérenne et le Quaternaire meuble: exemple de l'Amérique du Nord],
Brochu, M., *Il Polo*, March 1985, 41(1), p.1-4, In French.
Quaternary deposits, Permafrost, Glaciation.

39-2991
Preliminary study of antarctic iceberg towing to Atacama province, Chile. [Etude préliminaire sur le remorquage d'icebergs antarctiques vers la province d'Atacama au Chili],
Cordonnier, C., *Il Polo*, March 1985, 41(1), p.9-11, In French. 6 refs.
Iceberg towing.
The possibility of towing antarctic icebergs to Antofagasta, Chile, is explored, taking into consideration the relatively short voyage, the favorable currents, and the low water temperature. The practical aspects and the economic advantages of icebergs as a fresh water source are discussed.

39-2992
Estimates of future sea level rise.
Hoffman, J.S., Greenhouse effect and sea level rise; a challenge for this generation, Edited by M.C. Barth and J.G. Titus, New York, Van Nostrand Reinhold, 1984, p.79-103, Refs. p.101-103.
DLC GC89.G74
Ice melting, Ice sheets, Snow melting, Sea level, Atmospheric composition, Climatic changes.
The approach used for estimating sea level rise is presented, and future atmospheric composition, global temperature, and ocean glacial responses to global warming are discussed and tabulated. It is suggested that meltwater will contribute to crevassing and ice softening which could accelerate the deglaciation of the ice sheets. In Antarctica, deglaciation is likely because large parts of antarctic ice fields, being below sea level, are subject to rapid collapse. The speed of deglaciation will depend on such factors as ocean currents, the fractional coefficients of the "surging" ice, and the specific topography of pinnings and outlet channels.

39-2993
Ice loads upon a cylindrical offshore structure.
Kajaste-Rudnitski, J., et al, *Finland. Technical Research Centre. Research notes*, 1985, No.432, 46p. + appends., 8 refs.
Jumppanen, P., Sackinger, W.M.
Ice loads, Offshore structures, Ice mechanics, Concrete structures, Ice pressure, Stresses, Ice temperature, Analysis (mathematics).

39-2994
Relationship between types of precipitation on the ground and surface meteorological elements.
Matsuo, T., et al, *Meteorological Society of Japan. Journal*, Aug. 1981, 59(4), p.462-476, 6 refs.
Sasyo, Y., Sato, Y.
Snowfall, Rain, Precipitation (meteorology), Meteorological factors, Snowflakes, Meteorological data, Surface temperature, Air temperature, Statistical analysis.

39-2995
Precipitation in Switzerland. [Der Niederschlag in der Schweiz],
Sevruk, B., ed, Beiträge zur Geologie der Schweiz—Hydrologie, No.31, Bern, Kümmerly & Frey, 1985, 278p., In German with French and English summaries. Refs. passim. For selected papers see 39-2996 through 39-3001.
Precipitation (meteorology), Snowfall, Snow accumulation, Snow water equivalent, Mountains, Altitude, Rain, Hail, Switzerland.

39-2996
Correction of precipitation data by snow measurements. [Korrektur der Niederschlagsdaten durch Schneemessungen],
Martinec, J., Beiträge zur Geologie der Schweiz -Hydrologie, No.31, Bern, Kümmerly & Frey, 1985, p.77-86, 10 refs., In German with French and English summaries.
Snowfall, Snow accumulation, Precipitation (meteorology), Runoff, Snow water equivalent, Statistical analysis, Mountains, Switzerland.

39-2997
Peculiarities of snow precipitation. [Besonderheiten des Schneeniederschlages],
Föhn, P.M.B., Beiträge zur Geologie der Schweiz Hydrologie, No.31, Bern, Kümmerly & Frey, 1985, p.87-96, 10 refs., In German with French and English summaries.
Snowfall, Snowstorms, Precipitation (meteorology), Snow water equivalent, Snow accumulation, Measuring instruments, Accuracy, Statistical analysis, Mountains, Switzerland.

39-2998
Precipitation determination in glacierized mountains. [Niederschlagsbestimmung im vergletscherten Hochgebirge],
Aellen, M., Beiträge zur Geologie der Schweiz – Hydrologie, No.31, Bern, Kümmerly & Frey, 1985, p.97-105, 14 refs., In German with French and English summaries.
Snowfall, Snow accumulation, Snow hydrology, Glacial meteorology, Precipitation (meteorology), Climatic factors, Topographic effects, Runoff, Glacial rivers, Glacier mass balance, Mountains, Switzerland.

39-2999
Hail precipitation: detection and measurement. [Hageliniederschlag: Erkennung und Messung],
Waldvogel, A., Beiträge zur Geologie der Schweiz – Hydrologie, No.31, Bern, Kümmerly & Frey, 1985, p.107-126, 18 refs., In German with French and English summaries.
Hail, Precipitation (meteorology), Radar echoes, Falling bodies, Rain, Mountains, Switzerland.

39-3000
Contribution of snow to monthly precipitation. [Schneeanteil am Monatsniederschlag],
Sevruk, B., Beiträge zur Geologie der Schweiz - Hydrologie, No.31, Bern, Kümmerly & Frey, 1985, p.127-138, 21 refs., In German with French and English summaries.
Snowfall, Snow accumulation, Precipitation (meteorology), Temperature effects, Seasonal variations, Altitude, Mountains, Switzerland.

39-3001
Dependence of precipitation on altitude. [Höhenabhängigkeit der Niederschläge],
Lang, H., Beiträge zur Geologie der Schweiz Hydrologie-, No.31, Bern, Kümmerly & Frey, 1985, p.149-158, 22 refs., In German with French and English summaries.
Snowfall, Precipitation (meteorology), Water balance, Snow accumulation, Altitude, Flood forecasting, Precipitation gages, Mountains, Switzerland.

39-3002
Summer wetlands in the frozen north.
Everett, K.R., *Geographical magazine*, Oct. 1983, 55(10, p.510-515.
Tundra, Vegetation patterns, Permafrost, Seasonal freeze thaw.

39-3003
History of vegetational cover in northern Asia. [Istoriia rastitel'nogo pokrova Severnoĭ Azii],
Malyshev, L.I., ed, Novosibirsk, Nauka, 1984, 161p., In Russian. For selected papers see 39-3004 through 39-3008. Refs. passim.
Vegetation, Ecosystems, Mountain soils, Plant ecology, Cryogenic soils, Alpine tundra, Alpine landscapes, Snow line, Deserts, Snow cover distribution, Nivation, Vegetation patterns.

39-3004
Basic stages in the development of high-mountain flora of the Sikhote-Alin'. [Osnovnye vekhi stanovleniia vysokogornoĭ flory Sikhote-Alinia],
Kharkevich, S.S., et al, Istoriia rastitel'nogo pokrova Severnoĭ Azii (History of vegetational cover in northern Asia) edited by L.I. Malyshev, Novosibirsk, Nauka, 1984, p.5-21, In Russian. 39 refs.
Vyshin, I.B.
Alpine landscapes, Vegetation patterns, Cryogenic soils, Plant ecology, Ecosystems, Snow line, Altitude.

39-3005
Origin of nival vegetation of the Asiatic part of the Bering Sea area. [O proiskhozhdenii nival'noĭ rastitel'nosti aziatskoĭ Beringii],
Razzhivin, V.IU., Istoriia rastitel'nogo pokrova Severnoĭ Azii (History of vegetational cover in northern Asia) edited by L.I. Malyshev, Novosibirsk, Nauka, 1984, p.22-31, In Russian. 20 refs.
Nivation, Vegetation patterns, Tundra, Plant ecology, Snow cover distribution, Ecosystems, Snow accumulation, Forest tundra, Origin, USSR – Chukotskiy Peninsula.

39-3006
Formation of high-mountain flora in the central part of the Soviet Far East. [Nekotorye osobennosti formirovaniia vysokogornoĭ chasti sovetskogo Dal'nego Vostoka],
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Vegetation patterns, Migration, Alpine landscapes, Plant ecology, Plant physiology, Polar regions.

39-3007
Forests of Central Khangay (Mongolian People's Republic) in Holocene and trends in their recent development. [Lesa Tsentral'nogo Khangaia (MNR) v golotsene i tendentsii ikh sovremennogo razvitiia],
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Soil erosion, Mountain soils, Revegetation, Environmental protection, Taiga, Deserts, Slope orientation, Alpine landscapes, Permafrost distribution, Organic soils, Peat, Cryogenic soils, Climatic factors, Human factors.

39-3008
Historical trends in vegetation zonality of the Central Siberian Plateau. [Istoricheskaia obuslovlennost' zonal'nosti vo flore Srednesibirskogo Ploskogor'ia],
Vodop'ianova, N.S., Istoriia rastitel'nogo pokrova Severnoĭ Azii (History of vegetational cover in northern Asia) edited by L.I. Malyshev, Novosibirsk, Nauka, 1984, p.93-106, In Russian. 32 refs.
Bibliographies, Cryogenic soils, Continuous permafrost, Sporadic permafrost, Plant ecology, Ecosystems, Vegetation patterns, Migration, Subarctic landscapes, Alpine landscapes.

39-3009
Introduction of decorative plants in Yakutia. [Introduktsiia dekorativnykh rasteniĭ v IAkutii],
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Introduced plants, Cryogenic soils, Subarctic landscapes, Permafrost distribution, Grasses, Active layer.

39-3010
Results of the introduction of decorative plants in central Yakutia. [Itogi introduktsii dekorativnykh rasteniĭ v Tsentral'noĭ IAkutii],
Krotova, Z.E., et al, Introduktsiia dekorativnykh rasteniĭ v IAkutii (Introduction of decorative plants in Yakutia) edited by V.N. Andreev, Yakutsk, Yakut Fil. SO AN SSSR, 1984, p.5-11, In Russian. 16 refs.
IArina, O.A., Petrova, A.E.
Cryogenic soils, Introduced plants, Plant ecology, Subarctic landscapes, Plant physiology, Ecosystems.

39-3011
Review of studies of flora in Yakutia. [Introduktsionnaia izuchennost' flory IAkutii],
Savkina, Z.P., et al, Introduktsiia dekorativnykh rasteniĭ v IAkutii (Introduction of decorative plants in Yakutia) edited by V.N. Andreev, Yakutsk, Yakut fil. SO AN SSSR, 1984, p.12-29, In Russian. 15 refs.
Ecosystems, Bibliographies, Classifications, Introduced plants, Cryogenic soils, Subarctic landscapes, Permafrost distribution, Plant ecology, Plant physiology.

39-3012
Environmental changes of highlands in Greater Caucasus due to human activities. [Antropogennye preobrazovaniia prirody vysokogoriĭ Bol'shogo Kavkaza],
Sukhodrovskiĭ, V.L., *Geografiia i prirodnye resursy*, Jan.-Mar. 1985, No.1, p.49-54, In Russian. 5 refs.
Soil erosion, Slope processes, Environmental protection, Solifluction, Alpine landscapes, Human factors, Environmental impact.

39-3013
Morpholithogenesis and denudation in the periglacial belt of southern East Siberia. [K voprosu morfolitogeneza i denudatsii v periglatsial'nom poiase iuga Vostochnoĭ Sibiri],
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Mudflows, Avalanches, Mountain glaciers, Periglacial processes, Soil creep, Geocryology, Permafrost distribution, Earthquakes, Glacial deposits, Alpine landscapes, Avalanche deposits, Slope processes.

39-3014
Productivity of high mountain communities of the Altai-Sayany region. [Produktivnost' vysokogornykh soobshchestv Altae-Saianskoĭ gornoĭ oblasti],
Seidel'nikov, V.P., *Geografiia i prirodnye resursy*, Jan.-Mar. 1985, No.1, p.87-91, In Russian. 3 refs.
Alpine tundra, Vegetation pattern, Biomass, Meadow soils, Grazing, Soil erosion, Plant ecology, Alpine landscapes, Revegetation.

39-3015
Regionalization of vegetational cover of the BAM zone based on quantitative analyses of geobotanical maps. [Ratonirovanie rastitel'nogo pokrova zony BAMa na osnove kolichestvennogo analiza obzornykh geobotanicheskikh kart],
Kobeleva, N.V., et al, *Geografiia i prirodnye resursy*, Jan.-Mar. 1985, No.1, p.120-125, In Russian. 11 refs.
Lavrenko, N.N.
Vegetation patterns, Mapping, Taiga, Alpine tundra, Swamps, Baykal Amur railroad, Charts, Permafrost distribution.

39-3016
Individual design method for small river hydrographs in eastern Siberia. [Realizatsiia metoda individual'nogo proektirovaniia gidrografov malykh rek Vostochnoĭ Sibiri],
Petenkov, A.V., *Geografiia i prirodnye resursy*, Jan.-Mar. 1985, No.1, p.125-133, In Russian. 10 refs.
Hydrology, River basins, Snow cover distribution, Taiga, Tundra, Permafrost distribution, Ground ice, Snow water equivalent, Ice volume.

39-3017
More on the paludification problem of western Siberia. [Eshche raz k voprosu o zabolochennosti Zapadnoĭ Sibiri],
Neĭshtadt, M.I., et al, *Geografiia i prirodnye resursy*, Jan.-Mar. 1985, No.1, p.139-144, In Russian. 14 refs.
Malik, L.K., Vediushkin, M.A.
Taiga, Forest soils, Paludification, Drainage, Peat, Permafrost distribution.

39-3018
Use of satellite information in geocryological studies. [Ob ispol'zovanii aerokosmicheskoĭ informatsii pri geokriologicheskikh issledovaniiakh],
Shats, M.M., et al, *Geografiia i prirodnye resursy*, Jan.-Mar. 1985, No.1, p.174-178, In Russian. 8 refs.
Dorofeev, I.V.
Geocryology, Mapping, Spaceborne photography, Photointerpretation, Landscape types.

39-3019
Arctic icebreakers during the war years. [Arkticheskie ledokoly v gody voĭny],
Stefanovich, A.N., *Sudostroenie*, Apr. 1985, No.4, p.51-54, In Russian. 6 refs.
Ice navigation, Military transportation, Military operation, Icebreakers.

39-3020
Cryogenic soils of Yakutia and their utilization. [Merzlotnye pochvy IAkutii i ikh ispol'zovanie],
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Mapping, Permafrost hydrology, Permafrost structure, Thermokarst, Permafrost control, Alassy, Meadow soils, Economic development, Taiga, Agriculture, Land reclamation.

39-3021
Forest soils of the Lena-Amga interfluve. [O pochvakh alasov Leno-Amginskogo mezhdurech'ia],
Desiatkin, R.V., Merzlotnye pochvy IAkutii i ikh ispol'zovanie (Cryogenic soils of Yakutia and their utilization) edited by L.G. Elovskaia, Yakutsk, Yakut. Fil. SO AN SSSR, 1984, p.14-20, In Russian. 6 refs.
Taiga, Permafrost hydrology, Thermokarst, Forest soils, Alassy, Meadow soils, Cryogenic soils.

39-3022
Basic principles of regionalization for cryogenic melioration and economic land development under permafrost conditions. [Osnovnye printsipy merzlotno-meliorativnogo ratonirovaniia pri osvoenii i melioratsii zemel' v usloviiakh mnogoletnei merzloty],
Gavril'ev, P.P., Merzlotnye pochvy IAkutii i ikh ispol'zovanie (Cryogenic soils of Yakutia and their utilization) edited by L.G. Elovskaia, Yakutsk, Yakut. Fil. SO AN SSSR, 1984, p.20-34, In Russian. 7 refs.
Land reclamation, Mapping, Continuous permafrost, Permafrost structure, Permafrost hydrology, Thermokarst, Permafrost control.

39-3023
Grouping Yakutian lands for agricultural development. [Agroproizvodstvennaia gruppirovka zemel' IAkutii],
Elovskaia, L.G., et al, Merzlotnye pochvy IAkutii i ikh ispol'zovanie (Cryogenic soils of Yakutia and their utilization) edited by L.G. Elovskaia, Yakutsk, Yakut Fil. SO AN SSSR, 1984, p.34-48, In Russian. 8 refs.
Cryogenic soils, Permafrost distribution, Mapping, Permafrost structure, Permafrost hydrology, Active layer, Permafrost depth, Economic development, Soil profiles, Soil composition.

39-3024
Cycle of chemical elements in taiga landscapes of southern Yakutia. ¡Krugovorot elementov v taezhnykh landshaftakh IUzhnoĭ IAkutii¡,
Konorovskiĭ, A.K., et al, Merzlotnye pochvy IAkutii i ikh ispol'zovanie (Cryogenic soils of Yakutia and their utilization) edited by L.G. Elovskaia, Yakutsk, Yakut. Fil. SO AN SSSR, 1984, p.49-60, In Russian. 19 refs.
Chevychelov, A.P., Shindler, D.R.
Cryogenic soils, Seasonal freeze thaw, Soil chemistry, Nutrient cycle, Forest soils, Taiga.

39-3025
Water regime of cryogenic chernozem-meadow soils and water consumption of perennial grasses according to development phases. ¡Rezhim vlazhnosti merzlotnykh chernozemno-lugovykh pochv i vodopotreblenie mnogoletnikh trav po fazam razvitiia¡,
Semenova, T.N., Merzlotnye pochvy IAkutii i ikh ispol'zovanie (Cryogenic soils of Yakutia and their utilization) edited by L.G. Elovskaia, Yakutsk, Yakut. Fil. SO AN SSSR, 1984, p.61-65, In Russian. 2 refs.
Meadow soils, Active layer, Grasses, Soil water migration, Plant ecology, Cryogenic soils, Plant physiology.

39-3026
Irrigation of cryogenic chernozem. ¡Voprosy orosheniia merzlotnogo chernozema¡,
Poriadin, V.M., Merzlotnye pochvy IAkutii i ikh ispol'zovanie (Cryogenic soils of Yakutia and their utilization) edited by L.G. Elovskaia, Yakutsk, Yakut. Fil. SO AN SSSR, 1984, p.65-71, In Russian. 7 refs.
Irrigation, Frozen fines, Chernozem, Loams, Soil composition, Frost penetration, Grasses, Ground ice, Soil temperature, Soil water migration, Active layer.

39-3027
Water regime of burned-out areas in northern taiga. ¡Rezhim vlazhnosti pochvy gari severnoĭ taĭgi¡,
Tarabukina, V.G., et al, Merzlotnye pochvy IAkutii i ikh ispol'zovanie (Cryogenic soils of Yakutia and their utilization) edited by L.G. Elovskaia, Yakutsk, Yakut. Fil. SO AN SSSR, 1984, p.72-75, In Russian. 3 refs.
Stepanov, G.M.
Forest fires, Soil water migration, Taiga, Soil composition, Water content, Soil temperature, Permafrost depth, Permafrost compositon.

39-3028
Modelling the effect of microrelief on thermal regime of soils under northern conditions. ¡Modelirovanie vliianiia mikrorel'efa na teplovoĭ rezhim pochvy v usloviiakh Severa¡,
Romanov, P.G., Merzlotnye pochvy IAkutii i ikh ispol'zovanie (Cryogenic soils of Yakutia and their utilization) edited by L.G. Elovskaia, Yakutsk, Yakut. Fil. SO AN SSSR, 1984, p.75-82, In Russian. 13 refs.
Microrelief, Cryogenic soils, Active layer, Permafrost depth, Permafrost structure, Heat transfer, Microclimatology.

39-3029
Nitrogen cycle of cryogenic soils in flood plains and the productivity of hay meadows. ¡Azotnyĭ rezhim merzlotnoĭ poĭmennoĭ pochvy i produktivnost' kul'turnykh senokosov¡,
Batyev, Kh.A., Merzlotnye pochvy IAkutii i ikh ispol'zovanie (Cryogenic soils of Yakutia and their utilization) edited by L.G. Elovskaia, Yakutsk, Yakut. Fil. SO AN SSSR, 1984, p.96-110.
Meadow soils, Permafrost beneath rivers, Floodplains, Cryogenic soils, Nutrient cycle.

39-3030
Relationships among bank recession, vegetation, soils, sediments and permafrost on the Tanana River near Fairbanks, Alaska.
Gatto, L.W., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1984, SR 84-21, 53p., ADA-152 332, 31 refs.
Banks (waterways), Soil erosion, Permafrost distribution, Vegetation, River flow, Sediments, Hydraulics, United States—Alaska—Tanana River.
The objective of this analysis was to determine if available data are useful in identifying the characteristics that contribute to erodibility of the banks along two reaches of the Tanana River. Existing data on bank vegetation, soils, sediments and permafrost were used. Because these data were general and not collected for the purpose of site-specific analysis, the analytical approach was simple and did not include any statistical tests. The data were visually compared to the locations and estimated amounts of historical recession to evaluate if any relationships were obvious. The results of this analysis showed no useful relationships.

39-3031
Snow-Two/Smoke Week VI field experiment plan.
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Snowfall, Transmissivity, Wave propagation, Scattering, Smoke generators, Falling bodies, Visibility, Explosives, Snow cover effect, Blowing snow, Tests, Helicopters.

39-3032
Snowfighters face many challenges.
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Snow removal, Ice removal, Winter maintenance, Road maintenance, Ice control, Air temperature, Precipitation (meteorology), Safety.

39-3033
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Hydraulic structures, Vehicles, Sea ice, Ice conditions, Cables (ropes), Climatic factors.

39-3034
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Lake ice, Ports, Foundations, Ice conditions, Engineering, Ice control, Floating structures, Soil mechanics, Piers, Pile extraction, Design, Great Lakes.

39-3035
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Anderson, D.L., Janzen, W.
Soil mechanics, Well casings, Pile load tests, Shear strength, Ice loads, Artificial islands, Flexural strength, Earthquakes.

39-3036
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Murty, T.S., et al, *Journal of waterway, port, coastal and ocean engineering*, Mar. 1985, 111(2), p.329-336, 15 refs.
Holloway, G.
Ice cover effect, Tides, Wave propagation, Storms, Ocean waves, Ice cover thickness.

39-3037
German ice technology.
Redder, J., ed, *Offshore*, May 1985, 45(5), p.217-238.
Ice navigation, Icebreakers, Offshore drilling, Ice loads, Offshore structures, Engineering, Ice breaking, Shear stress, Ice mechanics, Pipelines, Metal ice friction, Welding, Germany.

39-3038
Pipelines and frost heave.
Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984, Ottawa, Carleton University, July 1984, 75p., English version. Refs. passim. For individual papers see 39-3039 through 39-3051.
Dallimore, S.R., ed, Williams, P.J., ed.
Frost heave, Underground pipelines, Gas pipelines, Freeze thaw cycles, Soil freezing, Meetings, Rheology, Permafrost beneath roads, Settlement (structural), Deformation, Hot oil lines.

39-3039
Experimental observations of differential heaving and thaw settlement around a chilled pipeline.
Dallimore, S.R., et al, Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984. Proceedings. English version. Edited by S.R. Dallimore and P.J. Williams, Ottawa, Carleton University, July 1984, p.5-17, 6 refs.
Crawford, H.
Frost heave, Ground thawing, Freeze thaw cycles, Settlement (structural), Underground pipelines, Frost resistance, Unfrozen water content, Foundations, Temperature distribution, Design.

39-3040
Soil freezing and frost heaving at the Caen experiment.
Smith, M.W., Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984. Proceedings. English version. Edited by S.R. Dallimore and P.J. Williams, Ottawa, Carleton University, July 1984, p.19-21, 2 refs.
Soil freezing, Frost heave, Soil mechanics, Unfrozen water content, Frost penetration, France– Caen.

39-3041
Laboratory characterization of frost heaving of Caen silt.
Dallimore, S.R., Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984. Proceedings. English version. Edited by S.R. Dallimore and P.J. Williams, Ottawa, Carleton University, July 1984, p.23-26, 6 refs.
Frost heave, Freeze thaw cycles, Frost penetration, Tests, Statistical analysis, France—Caen.

39-3042
Behaviour of soils in the Arctic.
Blanchard, D., et al, Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984. Proceedings. English version. Edited by S.R. Dallimore and P.J. Williams, Ottawa, Carleton University, July 1984, p.27-30, 10 refs.
Frémond, M.
Permafrost beneath structures, Soil water, Frost heave, Underground pipelines, Soil mechanics, Models, Unfrozen water content, Temperature factors, Thermal properties.

39-3043
Bending stresses in pipe due to frost heave.
Bowes, W.H., Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984. Proceedings. English version. Edited by S.R. Dallimore and P.J. Williams, Ottawa, Carleton University, July 1984, p.31-33.
Frost heave, Underground pipelines, Freeze thaw cycles, Stresses, Frost action, Deformation.

39-3044
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Frost heave, Underground pipelines, Deformation, Frost resistance, Interfaces, Temperature effects, Viscoelastic materials, Models.

39-3045
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Ladanyi, B., et al, Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984. Proceedings. English version. Edited by S.R. Dallimore and P.J. Williams, Ottawa, Carleton University, July 1984, p.39-42, 8 refs.
Lemaire, G.
Soil strength, Underground pipelines, Frost heave, Frozen ground mechanics, Soil creep, Temperature distribution, Mathematical models.

39-3046
Frost heave and thaw settlement test facilities.
Carlson, L.E., Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984. Proceedings. English version. Edited by S.R. Dallimore and P.J. Williams, Ottawa, Carleton University, July 1984, p.43-47, 3 refs.
Frost heave, Settlement (structural), Ground thawing, Underground pipelines, Frozen ground settling, Gravel, Gas pipelines, Tests, Design.

39-3047
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Kettle, R.J.
Soil freezing, Frost heave, Underground pipelines, Gas pipelines, Tests, Artificial freezing, Pressure, Freezing rate.

39-3048
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Frost heave, Underground pipelines, Grain size, Clay soils, Forecasting, Temperature distribution, Frost penetration.

39-3049
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Discontinuous permafrost, Frost heave, Underground pipelines, Shear properties, Frost action, Permafrost beneath roads, Frost penetration, Damage, Design criteria.

39-3050
Some reflections on fundamental research in the freezing of soils.
Aguirre-Puente, J., Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984. Proceedings. English version. Edited by S.R. Dallimore and P.J. Williams, Ottawa, Carleton University, July 1984, p.63-65, 38 refs.
Soil freezing, Frozen ground thermodynamics, Frost heave, Roads, Protection, Temperature gradients.

39-3051
The industrial problem.
Raulin, P., Seminar on Pipelines and Frost Heave, Caen, Apr. 25-27, 1984. Proceedings. English version. Edited by S.R. Dallimore and P.J. Williams, Ottawa, Carleton University, July 1984, p.67.
Permafrost, Gas pipelines, Underground pipelines, Frost heave, Engineering, Thermal properties, Heat transfer, Cooling, Artificial freezing.

39-3052
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Craig, S.J., WDOE 83-12, Olympia, Washington, State Department of Ecology, Feb. 1984, 9 chapters, Refs. passim.
Offshore structures, Ecology, Environmental impact, Ice conditions, Artificial islands, Offshore drilling, Natural resources, Construction materials, Environmental protection, Platforms, Arctic Ocean.

39-3053
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Permafrost distribution, Soil temperature, Permafrost depth, Thermal conductivity, Discontinuous permafrost, Latent heat, Microclimatology, Temperature variations, River basins, Migration, Deltas, Canada—Northwest Territories—Mackenzie River Delta.

39-3054
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Stallabrass, J.R.
Power line icing, Ice accretion, Structures, Cables (ropes), Surface properties, Wind tunnels, Ice spectroscopy, Ice density, Icing rate, Mathematical models, Experimentation.

39-3055
Experimental determination of thermal stresses, tensile strength and relaxation capacity of poured asphalt pavements at low temperatures. [Die experimentelle Ermittlung thermischer Spannungen, Zugfestigkeiten und des Relaxationsvermögens von Gussasphaltbelägen bei tiefen Temperaturen].
Lempe, U., et al, *Bitumen,* 1985, 47(1), p.15-19. In German. 4 refs.
Maleki, N.
Bitumens, Pavements, Low temperature tests, Winter concreting, Thermal properties, Tensile properties, Relaxation (mechanics), Stresses.

39-3056
Sediment discharge data for selected sites in the Susitna River basin, Alaska, October 1982 to February 1984.
Knott, J.M., et al, *U.S. Geological Survey. Open-file report,* 1985, 85-157, 68p., 10 refs.
Lipscomb, S.W.
Sediment transport, River basins, Suspended sediments, Seasonal variations, United States—Alaska—Susitna River.

39-3057
Sea ice of the southern ocean and navigation conditions. [L'dy IUzhnogo okeana i usloviia sudokhodstva].
Romanov, A.A., Leningrad, Gidrometeoizdat, 1984, 88p. + charts, In Russian. Refs. p.85-88.
Ice navigation, Sea ice distribution, Maps, Drift.
The first chapter of this book describes the physical and geographic characteristics of the southern ocean, including the atmospheric circulation and meteorological conditions in the area. Ch. 2 describes the formation and development of sea ice, including the dynamics of drifts, fast ice, icebergs and polynyas. In Ch. 3, the structural and physico-mechanical properties of antarctic ice are discussed, while chapters 4 and 5 consider the effects of prevailing conditions on navigation in the area, such as the icing of ships, the danger of collision with icebergs, etc; recommendations for dealing with such dangers are made. Data gathering and dissemination, and services available to ships are described. Twenty-four tables and 59 maps are given, including those showing the seasonal minimal and maximal ice extent, the monthly estimation of ice age and ice distribution.

39-3058
Hydrates of natural gases beneath the oceans. [Gidraty prirodnogo gaza v nedrakh Mirovogo okeana].
Ginsburg, G.D., et al, Neftegazonosnost' Mirovogo okeana (Petroleum and gas deposits beneath the oceans). Edited by I.S. Gramberg and IU.N. Kulakov, Leningrad, 1984, p.141-158, In Russian. 24 refs.
Ivanov, V.L., Solov'ev, V.A.
Clathrates, Natural gas, Ocean environments, Bottom sediment, Core samplers, Drill core analysis, Acoustic measurement, Origin, Hydrates.

39-3059
Scientific-practical conference on the topic "Man and nature in the Far East", Vladivostok, Oct. 4-5, 1984. Summaries. [Tezisy dokladov].
Krasnov, E.V., ed. Vladivostok, 1984, 166p., In Russian. For selected summaries see 39-3060 through 39-3065. Refs. passim.
Mining, Ice rafting, Fast ice, Petroleum industry, Electric power, Subarctic landscapes, Environmental impact, Sea ice distribution, Pollution, Economic development.

39-3060
Rational use of minerals and raw-material resources in the Far North. [Ratsional'noe ispol'zovanie mineral'no-syr'evykh resursov *rationov Krainego Severa*].
Tsurikov, A.A., Nauchno-prakticheskaia konferentsiia "Chelovek i priroda na Dal'nem Vostoke", Vladivostok, Oct. 4-5, 1984. Tezisy dokladov (Scientific-practical conference on the topic "Man and nature in the Far East", Vladivostok, Oct. 4-5, 1984. Summaries) edited by E.V. Krasnov, Vladivostok, 1984, p.64-66, In Russian.
Economic development, Mining, Petroleum industry, Environmental protection, Cost analysis, Subarctic landscapes.

39-3061
Quantitative evaluation of the amount of clastic materials removed from coastal areas by ice rafting. [Metodika kolichestvennoĭ otsenki ledovogo zakhvata oblomochnogo materiala beregovoĭ zony].
Archikov, E.I., et al, Nauchno-prakticheskaia konferentsiia "*Chelovek i priroda na Dal'nem Vostoke*", Vladivostok, Oct. 4-5, 1984. Tezisy dokladov (Scientific-practical conference on the topic "Man and nature in the Far East", Vladivostok, Oct. 4-5, 1984. Summaries) edited by E.V. Krasnov, Vladivostok, 1984, p.74-75, In Russian.
Stepanova, L.E.
Fast ice, Beaches, Marine deposits, Suspended sediments, Ice rafting, USSR—Okhotsk Sea.

39-3062
Ecological aspects of economic development of the North. [Ekologicheskie aspekty osvoeniia Severa].
Bud'kov, S.T., Nauchno-prakticheskaia konferentsiia "Chelovek i priroda na Dal'nem Vostoke", Vladivostok, Oct. 4-5, 1984. Tezisy dokladov (Scientific-practical conference on the topic "Man and nature in the Far East", Vladivostok, Oct. 4-5, 1984. Summaries) edited by E.V. Krasnov, Vladivostok, 1984, p.79-80, In Russian.
Economic development, Mining, Roads, Railroads, Buildings, Electric power, Pipelines, Environmental protection, Subpolar landscapes.

39-3063
Selection of an optimal construction version for the Kolyma hydroelectric power plant and prediction of its environmental impact. [Opyt vybora optimal'nogo varianta stroitel'stva *GES na reke Kolyme i prognoz izmenenii prirodnoĭ sredy*].
Vas'kovskiĭ, A.P., et al, Nauchno-prakticheskaia konferentsiia "Chelovek i priroda na Dal'nem Vostoke" Vladivostok, Oct. 4-5, 1984. Tezisy dokladov (Scientific-practical conference on the topic "Man and nature in the Far East", Vladivostok, Oct. 4-5, 1984. Summaries) edited by E.V. Krasnov, Vladivostok, 1984, p.80-82, In Russian.
Zheleznov, N.K.
Taiga, River basins, Environmental protection, Electric power, Landscape types, Mountain soils, Permafrost distribution.

39-3064
Role of wind in relief formation in northern Sikhote Alin'. [Rol' vetra v reli[illegible] *Severo-Sikhote-Alinia*].
Koretskiĭ, A.P., Na[illegible] "Chelovek i priroda na Dal'nem Vostoke", Vladivostok, Oct. 4-5, 1984. [illegible] practical conference on the topic "Man and nature in the Far East", Vladivostok, [illegible] ies) edited by E.V. Krasnov, Vladivostok, 1984, p.101-102, In Russian.
Slope orientation, Plants (botany), Roads, Erosion, Slope processes, Soil [illegible], Alpine landscapes.

39-3065
Restoration of drying fir-spruce forests in the Central Sikhote Alin'. [Vosstanovlenie [illegible] pikhtovo-elovykh lesov Sredne[illegible]
Matorova, L.A., Nauchno-prakticheskaia konferentsiia "Chelovek i priroda na Dal'nem Vostoke", Vladivostok, Oct. 4-5, 1984. [illegible] practical conference on the topic "Man and nature in the Far East", Vladivostok, [illegible] ies) edited by E.V. Krasnov, Vladivostok, 1984, p.115-116, In Russian.
Forest land, Cryogenic soils, [illegible], Revegetation, Alpine landscapes.

39-3066
Reforestation in the southern taiga subzone of [illegible]. [Vosstanovlenie i podzone [illegible] Kotopachinskiĭ, I.I., ed. Krasnoyarsk, SO AN SSSR, 1983, 125p., In Russian. For selected papers see *39-3067 through 39-3071.* Refs. passim.
Taiga, Soil erosion, Revegetation, Cryogenic soils, Forestry, Mountains, Forest cover, Sporadic permafrost, Plains, Grasses, Plant [illegible], Human factors, USSR—Krasnoyarsk, USSR—[illegible].

39-3067
Natural restoration beneath the canopy of southern taiga. [Estestvennoe [illegible] drevostoev iuzhnoĭ tai[illegible]
Babintseva, R.M., et al, [illegible] iuzhnoĭ taigi (Reforestation [illegible] zone) edited by I.I. Kotopachinskiĭ, [illegible] AN SSSR, 1983, p.5[illegible]
Cherednikova, I.S.
Taiga, Forestry, Soil erosion, Revegetation, Landscape types, Cryogenic soils, [illegible], Human factors.

39-3068
Estimation of artificial reforestation quality on the Bol'shemurtinskiy Forestry. [Otsenka [illegible] kusstvennogo [illegible] skom leskhoze].
Vital'ev, A.P., et al, [illegible] iuzhnoĭ taigi (Reforestation [illegible] zone) edited by I.I. Kotopachinskiĭ, [illegible] AN SSSR, 1983, p.[illegible]
Varaksin, G.S.
Taiga, Revegetation, Cryogenic soils, Forestry, Sporadic permafrost, USSR—[illegible].

39-3069
Changes in vegetational cover of mid-taiga pine forests due to human activities. [[illegible] nogo pokrova v sosnovykh [illegible] antropogennogo [illegible]
Kravchikova, I.D., [illegible] iuzhnoĭ taigi (Reforestation [illegible] zone) edited by I.I. Kotopachinskiĭ, [illegible] AN SSSR, 1983, p.19[illegible]
Taiga, Human factors, Soil erosion, Cryogenic soils, Revegetation, Forestry, Sporadic permafrost.

39-3070
Forest-growing properties of [illegible] beneath forest cultures. [Lesorastitel'nye [illegible] kul'turami].
Gorbachev, V.N., [illegible] iuzhnoĭ taigi (Reforestation [illegible] edited by I.I. Kotopachinskiĭ, [illegible] SSSR, [illegible]
Cryogenic soils, Soil [illegible]
Taiga, Forestry, [illegible]

39-3071
Changes in chemical and biologic properties of soils beneath forest cultures. [Izmenenie khimicheskikh i biologicheskikh svoĭstv pochv pod lesnymi kul'turami],
Popova, E.P., et al, Lesovosstanovlenie v podzone iuzhnoĭ taĭgi (Reforestation in the southern taiga subzone) edited by I.IU. Koropachinskiĭ, Krasnoyarsk, SO AN SSSR, 1983, p.64-73, In Russian. 4 refs.
Perevoznikova, V.D.
Taiga, Forest soils, Revegetation, Soil microbiology, Cryogenic soils, Forestry, Soil profiles, Human factors, Soil chemistry, Maintenance, Sporadic permafrost.

39-3072
All-Union conference on radar meteorology, 6th, Tallin, Apr. 20-23, 1982. Proceedings. [Trudy],
Vsesoiuznoe soveshchanie "Radiometeorologiia", 6th, Tallin, Apr. 20-23, 1982, Leningrad, Gidrometeoizdat, 1984, 357p., In Russian. For selected papers see 39-3073 through 39-3076. Refs. passim.
Ivanov, A.A., ed, Smirnova, G.A., ed.
Ice nuclei, Radiometry, Radar echoes, Cloud physics, Supercooled clouds, Cloud droplets, Radar photography, Hail, Humidity, Ice formation, Air temperature, Ice growth.

39-3073
Radar detection of hail and determination of the state of clouds. [Radiolokatsionnoe obnaruzhenie grada i opredelenie predgradovogo sostoianiia oblakov],
Abshaev, M.T., Vsesoiuznoe soveshchanie "Radiometeorologiia", 6th, Tallin, Apr. 20-23, 1982. Trudy (All-Union conference on radar meteorology, 6th, Tallin, Apr. 20-23, 1982. Proceedings) edited by A.A. Ivanov and G.A. Smirnova, Leningrad, Gidrometeoizdat, 1984, p.80-91, In Russian. 12 refs.
Ice formation, Cloud droplets, Ice nuclei, Radar echoes, Hail, Cloud physics, Air temperature.

39-3074
Using UIT (turbulence indication devices) for detecting areas of supercooled droplets in clouds and cloud systems. [Obnaruzhenie oblasteĭ s pereokhlazhdennoĭ zhidkokapel'noĭ vlagoĭ v oblakakh i oblachnykh sistemakh s pomoshch'iu UIT],
Koloskov, B.P., et al, Vsesoiuznoe soveshchanie "Radiometeorologiia". 6th, Tallin, Apr. 20-23, 1982. Trudy (All-Union conference on radar meteorology, 6th, Tallin, Apr. 20-23, 1982. Proceedings) edited by A.A. Ivanov and G.A. Smirnova, Leningrad, Gidrometeoizdat, 1984, p.91-94, In Russian. 1 ref.
Mel'nichuk, IU.V.
Radar echoes, Airborne radar, Supercooled clouds, Cloud droplets, Cloud physics, Weather modification.

39-3075
Radar image and the dynamics of hailstorm processes in the northern Caucasus. [Radiolokatsionnaia struktura i dinamika razvitiia grozogradovykh protsessov Severnogo Kavkaza],
Abshaev, M.T., Vsesoiuznoe soveshchanie "Radiometeorologiia". 6th, Tallin, Apr. 20-23, 1982. Trudy (All-Union conference on radar meteorology, 6th, Tallin, Apr. 20-23, 1982. Proceedings) edited by A.A. Ivanov and G.A. Smirnova, Leningrad, Gidrometeoizdat, 1984, p.109-115, In Russian.
Hail clouds, Ice formation, Radar echoes, Radar photography, Airborne radar, Ice nuclei, Ice growth.

39-3076
High-sensitivity radiometers for determining atmospheric humidity in freezing weather. [Primenenie vysokochuvstvitel'nykh radiometrov dlia opredeleniia vlagi v atmosfere zimoĭ],
Gorelik, A.G., et al, Vsesoiuznoe soveshchanie "Radiometeorologiia", 6th, Tallin, Apr. 20-23, 1982. Trudy (All-Union conference on radar meteorology, 6th, Tallin, Apr. 20-23, 1982. Proceedings) edited by A.A. Ivanov and G.A. Smirnova, Leningrad, Gidrometeoizdat, 1984, p.227-230, In Russian. 3 refs.
Frolov, IU.A.
Radiometry, Air temperature, Humidity, Measuring instruments.

39-3077
Neutron-activation technique of analyzing snow precipitation for monitoring microelement flux from the atmosphere into Lake Baykal. [Neĭtronno-aktivatsionnyĭ analiz snezhnykh osadkov dlia monitoringa potoka mikroelementov iz atmosfery v ozero Baĭkal],
Vetrov, V.A., et al, Vsesoiuznoe soveshchanie po iaderno-fizicheskim metodam analiza v kontrole okruzhaiushcheĭ sredy, 2nd, Riga, Apr. 20-22, 1982. Trudy (All-Union Conference on Nuclear-Physical Methods of Analysis in Environmental Control, 2nd, Riga, Apr. 20-22, 1982. Proceedings) edited by IU.A. Izrael', Leningrad, Gidrometeoizdat, 1985, p.211-218, In Russian. 4 refs.
Poslovin, A.L., Bobrov, V.A.
Water pollution, Atmospheric composition, Metals, Microelement content, Lake water.

39-3078
Landscapes of western Siberia; mapping, evaluation, forecasts of development. [Landshafty Zapadnoĭ Sibiri (kartografirovanie, otsenka, prognoz razvitiia)],
Bulatov, V.I., ed, Irkutsk, 1984, 115p., In Russian. For selected papers see 39-3079 through 39-3083. Refs. passim.
Vinokurov, IU.I., ed.
River basins, River diversion, Environmental impact, Environmental protection, Taiga, Natural resources, Swamps, Spaceborne photography, Geological surveys, Mapping, Tundra, Human factors, Coastal topographic features, Shores.

39-3079
Aley River basin: landscape mapping for practical purposes. [Basseĭn Aleia: landshaftnoe kartografirovanie dlia tseleĭ praktiki],
Bulatov, V.I., et al, Landshafty Zapadnoĭ Sibiri (kartografirovanie, otsenka, prognoz razvitiia) (Landscapes of western Siberia: mapping, evaluation, forecasts of development) edited by V.I. Bulatov and IU.I. Vinokurov, Irkutsk, 1984, p.3-33, In Russian. 11 refs.
Vinokurov, IU.I., Kovanova, A.A., Purdik, L.N.
Mapping, River basins, Cryogenic soils, Podsol, Natural resources, Environmental protection, Landscape types, Seasonal freeze thaw, Steppes, Frost penetration, Swamps, Forest land, USSR—Altai Mountains.

39-3080
Medium-scale landscape map of the Yamal Peninsula. [Srednemasshtabnaia landshaftnaia karta poluostrova IAmal],
Kozin, V.V., et al, Landshafty Zapadnoĭ Sibiri (kartografirovanie, otsenka, prognoz razvitiia) (Landscapes of western Siberia: mapping, evaluation, forecasts of development) edited by V.I. Bulatov and IU.I. Vinokurov, Irkutsk, 1984, p.34-40, In Russian.
Levchenko, V.S., Shliakhov, A.A.
Spaceborne photography, Mapping, Coastal topographic features, Shores, Polygonal topography, Landscape types, Tundra, Swamps, Peat, Geocryology.

39-3081
Landscape-indication technique of surveying for land reclamation. [Landshaftno-indikatsionnye issledovaniia pri obosnovanii melioratsii zemel'],
Vinokurov, IU.I., et al, Landshafty Zapadnoĭ Sibiri (kartografirovanie, otsenka, prognoz razvitiia) (Landscapes of western Siberia: mapping, evaluation, forecasts of development) edited by V.I. Bulatov and IU.I. Vinokurov, Irkutsk, 1984, p.41-76, In Russian. Refs. p.72-76.
Pudovkina, T.A., Tsimbaleĭ, IU.M.
Mapping, Land reclamation, Channels (waterways), Steppes, Saline soils, Irrigation, Seasonal freeze thaw, Frost penetration, Charts, USSR- Altai Mountains, USSR—Ob' River.

39-3082
Natural regionalization and landscapes of the Irtysh River area near Omsk. [Prirodnoe raĭonirovanie i landshafty Omskogo Priirtysh'ia],
Bulatov, V.I., Landshafty Zapadnoĭ Sibiri (kartografirovanie, otsenka, prognoz razvitiia) (Landscapes of western Siberia: mapping, evaluation, forecasts of development) edited by V.I. Bulatov and IU.I. Vinokurov, Irkutsk, 1984, p.77-97, In Russian. 21 refs.
Taiga, Thermokarst, Geological surveys, Swamps, Mapping, Geocryology, Charts, Landscape types, Permafrost hydrology.

39-3083
Landscape-geographic provisions for the program of partial runoff diversion from the Ob' and Irtysh rivers to Central Asia and Kazakhstan. [K metodike landshaftno-geograficheskogo obespecheniia programmy perebroski chasti stoka Obi i Irtysha v Sredniuiu Aziiu i Kazakhstan],
Mikheev, V.S., Landshafty Zapadnoĭ Sibiri (kartografirovanie, otsenka, prognoz razvitiia) (Landscapes of western Siberia: mapping, evaluation, forecasts of development) edited by V.I. Bulatov and IU.I. Vinokurov, Irkutsk, 1984, p.98-113, In Russian. 16 refs.
Mapping, River diversion, Permafrost beneath rivers, Swamps, Environmental impact, Taiga, Landscape types, Surveys.

39-3084
Review of technology and construction problems for surface flooded ice runway on deep snowfield.
Barthelemy, J.L., *U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory. Technical memorandum,* Aug. 1978, TM-61-78-11, 35p., 29 refs.
Ice (construction material), Ice runways, Flooding.
A major as-yet-unrealized (in 1978) goal of the U.S. operation at McMurdo Station is the construction of an ice runway on deep snow. The runway would be usable in all seasons and would accommodate large, wheeled, jet aircraft. The report summarizes and brings together relevant ideas and background information and suggests potential problems and possible solutions in the construction of such a runway through a process of surface flooding.

39-3085
Dependence of antarctic accumulation rates on surface temperature and elevation.
Muszynski, I., et al, *Tellus,* Mar. 1985, 37A(2), p.204-208, 25 refs.
Birchfield, G.E.
Ice sheets, Ice accretion, Surface temperature, Altitude.
A study of antarctic accumulation, surface temperature and elevation data reveals a strong correlation between the accumulation rate and the surface temperature which, in turn, is almost uniquely determined by the elevation of the ice sheet surface. The latitudinal temperature gradient seems to play a relatively minor role. The dependence of the accumulation rate on surface temperature and elevation is, to a very good approximation, linear. Two parameterizations of the accumulation rate are proposed for use in simple one-dimensional paleoclimatic models. (Auth.)

39-3086
Confirmed earthquake in continental Antarctica.
Adams, R.D., et al, *Geophysical journal,* May 1985, 81(2), p.489-492, 12 refs.
Hughes, A.A., Zhang, B.M.
Earthquakes, Antarctica—East Antarctica.
An earthquake of magnitude (Mb) 4.5 has been located by the International Seismological Centre, near 81S, 37E in the continental platform of East Antarctica, about 1200 km from the coast of Dronning Maud Land, and 500 km from the Pole of Inaccessibility. The event was found by the Centre's 'search' procedure, which is undertaken with a deliberate delay of about two years. It occurred on 1982 November 4, and its position is well determined from five stations in Antarctica, and four farther afield. This is the first earthquake definitely located in the interior of the antarctic continent, although there have been some earlier less well established claims, and other earthquakes have occurred near the coast, or associated with areas of volcanism or ice movement. (Auth.)

39-3087
Oil and gas technologies for the Arctic and deepwater.
Washington, D.C., U.S. Congress, Office of Technology Assessment, May 1985, 227p., OTA-0-270, Numerous refs. passim.
Natural resources, Oil recovery, Petroleum industry, Offshore drilling, Offshore structures, Sea ice, Economic development, Environmental impact.

39-3088
Sea ice microbial communities. 3. Seasonal abundance of microalgae and associated bacteria, McMurdo Sound, Antarctica.
McGrath Grossi, S., et al, *Microbial ecology,* 1984, 10(3), p.231-242, 33 refs.
Kottmeier, S.T., Sullivan, C.W.
Bacteria, Microbiology, Sea ice, Algae, Cryobiology, Antarctica—McMurdo Sound.
Numbers of bacteria in annual sea ice increased directly with numbers of algae during the 1981 spring ice diatom bloom in McMurdo Sound. Algae and bacteria in a control site grew at rates of 0.10 and 0.05 /day, respectively, where ice in an experimentally darkened area rather increased after 6 wk. Epiphytic bacteria grew at a rate twice that of the nonattached bacteria and were significantly larger, contributing approx. 30% of the total bacterial biomass after pennate diatoms, and *Amphiprora* sp. and *Nitzschia stellata*. More than 65% of epiphytic bacteria were associated with *Amphiprora* sp. after October. *N. stellata* remained largely uncolonized throughout the study. Microalgae probably stimulate bacterial growth in sea ice, possibly by providing the bacteria with organic substrates. (Auth.)

39-3089
Sea ice microbial communities. 4. The effect of light perturbation on microalgae at the ice-seawater interface in McMurdo Sound, Antarctica.
Palmisano, A.C., et al, *Marine ecology. Progress series*, Jan. 10, 1985, 21(1-2), p.37-45, Refs. p.44-45.
Kottmeier, S.T., Moe, R.L., Sullivan, C.W.
Sea ice, Ice water interface, Algae, Bacteria, Microbiology, Cryobiology, Antarctica—McMurdo Sound.
In McMurdo Sound an *in situ* light perturbation study was conducted on 1.5 m thick annual sea ice during the 1981 austral spring ice microalgal bloom. A 100 sq m quadrat was covered with snow to a depth of 70 cm reducing under ice irradiance by 97% *relative to a control* quadrat with 7 cm of natural snow cover. Samples were collected from the ice-sea water interface within each quadrat by SCUBA divers. After the first 3 wk of light perturbation *net ice growth* was about 20 cm; there was no significant difference in chlorophyll *a* ratios in the 2 quadrats during this period. However, during the following 3 wk when net ice growth was *zero, C:chl a ratios dropped to 38 in control* while ratios in the light perturbed quadrat remained high. Photosynthetic rate in the control reached a peak of 0.35 mg/C in early December but was not detectable in the light perturbed quadrat. Facultative heterotrophy was found in natural populations of sea ice diatoms at substrate concentrations close to ambient. Low rates of heterotrophic uptake may provide sufficient C and energy for maintenance metabolism during the dark winter months. (Auth. mod.)

39-3090
Infiltration in unsaturated frozen soil.
Engelmark, H., *Nordic hydrology*, 1984, 15(4/5), p.243-252, 6 refs.
Frozen ground, Seepage, Snowmelt, Hydraulics, Unfrozen water content, Runoff, Grasses, Gravel, Time factor, Mathematical models, Saturation.

39-3091
Alassy soils of the Lena-Amga interfluve. [Pochvy alasov Leno-Amginskogo mezhdurech'ia],
Desiatkin, R.V., Yakutsk, Yakut. fil. SO AN SSSR, 1984, 168p., In Russian with English table of contents enclosed. 167 refs.
Alassy, Frozen fines, Permafrost hydrology, Thermokarst, Meadow soils, Soil structure, Cryogenic soils, Permafrost distribution, Soil texture, Soil formation, Soil profiles.

39-3092
Morpholithosystems and landscape structure (exemplified by the Omolon River basin). [Morfolitosistemy i landshaftnaia struktura (na primere basseina reki Omolon)],
Egorova, G.N., Vladivostok, 1983, 164p., In Russian with English table of contents enclosed. Refs. p.150-155.
Lithology, River basins, Soil formation, Aerial surveys, Vegetation patterns, Geobotanical interpretation, Alpine tundra, Forest tundra, Floodplains, Swamps, Systems analysis, Geomorphology, Landscape types, Cryogenic soils, Ecology, Geography, Classifications.

39-3093
Review of major scientific results from U.S. satellite altimetry and projections for the future.
Apel, J.R., et al, *Marine geophysical researches*, 1984, 7(1/2), p.1-16, 12 refs.
Wilson, W.S.
Isostasy, Sea level, Sea ice distribution.
Precision radar altimeters have been flown on three U.S. satellites during the past decade. The initial purpose of the altimeter was to relate the topography of the sea surface to currents and other oceanographic parameters. However, other geophysical fields have been derived as well, among them the marine geoid, marine gravity anomaly, surface wave heights, surface swell heights, and surface wind fields. Additionally, the altimeter has been used to deduce distributions of tidal amplitudes, the position of sea ice around the antarctic continent and topography of the Greenland Ice Cap. (Auth.)

39-3094
Ionic balance of antarctic snow: a 10-year detailed record.
Legrand, M.R., et al, *Atmospheric environment*, 1984, 18(9), p.1867-1874, 35 refs.
Delmas, R.J.
Aerosols, Snow composition, Antarctica—Amundsen-Scott Station.
The concentrations at the 1-100 ng/g level of seven major ions of South Pole snow were determined in 100 samples representing *the continuous time period* 1959-1969. The ionic balance in South Polar snow is achieved for the first time and the existence of the three strong mineral acids H_2SO_4, HNO_3 and HCl is demonstrated. *With the aid of the clear seasonal patterns* exhibited by the depth profiles of several of the measured ions, the different natural sources contributing to the aerosol at the South Pole are reviewed. These include sea spray, volcanoes, biogenic activity and nitrogen fixation. (Auth.)

39-3095
Atmospheric trace elements in antarctic prehistoric ice collected at a coastal ablation area.
Boutron, C., et al, *Atmospheric environment*, 1984, 18(9), p.1947-1953, 33 refs.
Leclerc, M., Risler, N.
Aerosols, Pleistocene, Paleoclimatology, Ice composition, Antarctica—Adélie Coast.
Results of an analysis of 22 elements or compounds in a large block of prehistoric blue ice more than 12000 years old, collected at a coastal ablation area in east Antarctica, are presented. Successive veneer layers chiselled in sequence from the exterior to the center have been analysed separately in order to determine the contamination characteristics of the block. Concentrations measured in the central parts probably represent the original concentrations in the prehistoric blue ice, thus giving estimates of pre-man natural reference levels of these elements or compounds in antarctic precipitations. For the enriched elements Cd, Cu, Zn, Au, Se and for SO_4, concentrations are shown not to differ significantly from those presently observed in surface snow in the central plateau areas from which the ice is thought to originate. This suggests that the remote polar regions of the Southern Hemisphere are still little affected by global pollution for these elements and for S compounds. For crustal derived elements, concentrations in prehistoric ice are found to be significantly higher than those in present day snow; this confirms that crustal flux to the Antarctic continent was higher during Wisconsin times than now. (Auth.)

39-3096
Effect of ice cover on hydropower production.
Yapa, P.D., et al, *Journal of energy engineering*, Sep. 1984, 110(3), MP 1876, p.231-234, 7 refs.
Shen, H.T.
Ice cover effect, River flow, River ice, Water level, Dams, Ice conditions, Electric power, Ice surface, Ice cover strength, Surface roughness.

39-3097
Theoretical model of the fracture of rock during freezing.
Walder, J., et al, *Geological Society of America. Bulletin*, Mar. 1985, 96(3), p.336-346.
Hallet, B.
Rocks, Freezing, Crack propagation, Ice pressure, Porous materials, Ice growth, Freeze thaw cycles, Mathematical models, Cracking (fracturing).

39-3098
Analysis of river wave types.
Ferrick, M.G., *Water resources research*, Feb. 1985, 21(2), MP 1875, p.209-220, 20 refs.
Wave propagation, River flow, Ice jams, Dams, Electric power, Floods, Rain, Mathematical models.
In this paper we consider long-period, shallow-water waves in rivers that are a consequence of unsteady flow. River waves result from hydroelectric power generation or flow control at a dam, the breach of a dam, the formation or release of an ice jam, and rainfall-runoff processes. The Saint-Venant equations are generally used to describe river waves. This paper is an investigation into areas which are fundamental to river wave modeling. The analysis is based on the concept that river wave behavior is determined by the balance between friction and inertia. The Saint-Venant equations are combined to form a system equation that is written in dimensionless form. The dominant terms of the system equation change with the relative magnitudes of a group of dimensionless scaling parameters that quantify the friction-inertia balance. These scaling parameters are continuous, indicating that the various river wave types and the transitions between them form a spectrum.

39-3099
Ice jam prediction model as a tool in floodplain management.
Barnes-Svarney, P.L., et al, *Water resources research*, Feb. 1985, 21(2), p.256-260, 12 refs.
Montz, B.E.
Ice jams, Ice forecasting, Flood forecasting, Models, Meteorological data, Snowfall, Precipitation (meteorology), Temperature variations, Seasonal variations.

39-3100
Selection of steel qualities for low temperature use.
Charleux, J., et al, *Bureau Veritas. Bulletin technique. English issue*, July 1984, 13(3), p.184-193, 5 refs.
Huther, M.
Low temperature tests, Steels, Brittleness, Icebreakers, Tanks (containers), Fracturing, Cold weather performance, Liquefied gases.

39-3101
Structural and technologic peculiarities and the organization of pipeline construction management in western Siberia. [Konstruktivno-tekhnologicheskie osobennosti i organizatsiia upravleniia stroitel'stvom truboprovodov v Zapadnoi Sibiri],
Kuramin, V.P., et al, *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut organizatsii, upravleniia i ekonomiki neftegazovoi promyshlennosti. Neftianaia promyshlennost'. Seriia Neftepromyslovoe stroitel'stvo*, 1985, 47(2), 50p., In Russian with English table of contents enclosed. 4 refs.
Nidzel'skii, P.V., Gamarnik, V.B., Biriukov, V.V.
Gas pipelines, Hot oil lines, Underground pipelines, Suspended pipelines, Pipeline supports, Pipe laying, Transportation, Petroleum industry, Paludification, Permafrost beneath structures.

39-3102
Drilling equipment under extreme northern conditions. [Buril'naia tekhnika v ekstremal'nykh severnykh usloviiakh],
Verkhoturov, B.F., *Mekhanizatsiia stroitel'stva*, Apr. 1985, No.4, p.9-10, In Russian.
Drilling, Rotary drilling, Equipment, Permafrost, USSR—Yakutia.

39-3103
Industrialization of monolith concreting in freezing weather. [Industrializatsiia monolitnogo betonirovaniia v zimnikh usloviiakh],
Krasnovskii, B.M., *Mekhanizatsiia stroitel'stva*, Apr. 1985, No.4, p.11-13, In Russian. 2 refs.
Winter concreting, Construction equipment, Concrete placing, Concrete aggregates, Electric heating, Concrete hardening, Concrete strength.

39-3104
Determination of packing density of sea ice from satellite photographs. [Opredelenie splochennosti morskikh l'dov po aerokosmicheskim izobrazheniiam],
Aleksandrov, V.IU., et al, *Issledovanie Zemli iz kosmosa*, Mar.-Apr. 1985, No.2, p.5-11, In Russian with English summary. 5 refs.
Bushuev, A.V., Loshchilov, V.S.
Sea ice distribution, Pack ice, Spaceborne photography, Ice navigation, Ice reporting.

39-3105
Compilation of maps of water erosion of relief-forming rocks for analyzing and forecasting gully erosion in non-chernozem areas. [Opyt sostavleniia kart razmyvaemosti rel'efoobrazuiushchikh gornykh porod dlia analiza i prognoza ovrazhnoi erozii (na primere iuga Nechernozemnoi zony)],
Liubimov, B.P., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, Mar.-Apr. 1985, No.2, p.62-70, In Russian. 8 refs.
Soil erosion, Gullies, Mapping, Cryogenic soils, Podsol, Soil profiles, Charts, Clays, Peat, Loess.

39-3106
Biological recultivation of technical wastes in the Far North. [Biologicheskaia rekul'tivatsiia tekhnogennykh otvalov v usloviiakh Krainego Severa],
Kuz'min, IU.I., *Ekologiia*, Mar.-Apr. 1985, No.2, p.21-24, In Russian. 11 refs.
Tundra, Tailings, Soil erosion, Revegetation, Mining, Environmental protection, Geological surveys, Drilling, Excavation.

39-3107
Ecological role of lichen cover in the pine forests of central Vychegda. [Ob ekologicheskoi roli lishalnikovogo pokrova v belomoshnykh borakh srednei Vychegdy],
Bakaeva, M.V., et al, *Ekologiia*, Mar.-Apr. 1985, No.2, p.25-30, In Russian. 8 refs.
Galanin, A.V.
Lichens, Forest soils, Litter, Decomposition, Cryogenic soils, Plant ecology, Soil chemistry, Ecosystems, Soil temperature.

39-3108
Ways of formation of hummock-and-hollow microrelief in swamps. [Puti obrazovaniia griadovo-mochazhinnogo mikrorel'efa na bolotakh],
Piavchenko, N.I., *Ekologiia*, Mar.-Apr. 1985, No.2, p.77-80, In Russian. 8 refs.
Peat, Swamps, Mosses, Microrelief, Organic soils, Settlement (structural), Drainage, Stream flow, Plant ecology.

39-3109
Inflow of heavy-metal aerosols into southern taiga landscapes of the central Ural mountains. [Aerozol'noe postuplenie tiazhelykh metallov v iuzhnotaezhnye landshafty Srednego Urala],
Mel'chakov, IU.L., *Ekologiia*, Mar.-Apr. 1985, No.2, p.80-82, In Russian. 3 refs.
Snowfall, Soil pollution, Atmospheric composition, Aerosols, Snow impurities, Taiga, Metals, Landscape types, Environmental impact.

39-3110
Behavior of Sr-90 and Cs-137 in soils and their accumulation in plants. [Povedenie Sr90 i Cs137 v pochvakh i nakoplenie ikh v rasteniiakh],
Aliev, D.A., et al, *Ekologiia*, Mar.-Apr. 1985, No.2, p.85-89, In Russian. 8 refs.
Abdullaev, M.A.
Soil composition, Atmospheric composition, Fallout, Isotope analysis, Plant physiology, Radioactive isotopes, Landscape types, Soil pollution, USSR—Caucasus.

39-3111
Chemical stabilization of loess soils.
Sokolovich, V.E., et al, *Soil mechanics and foundation engineering*, July-Aug. 1984 (Publ. Jan.85), 21(4), p.149-154, Translated from Osnovaniia, fundamenty i mekhanika gruntov.
Semkin, V.V.
Clay soils, Soil compaction, Loess, Cements, Bearing strength, Wettability.

39-3112
Scientific basis for the design and construction of railroads in Siberia. [Nauchnoe obespechenie proektirovaniia i stroitel'stva zhelezhnykh dorog v Sibiri],
Stafeev, P.F., et al, *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.7-9, In Russian.
Protasov, N.N.
Models, Permafrost beneath structures, Baykal Amur railroad, Tunnels, Earthwork, Bridges, Embankments, Hydraulic structures.

39-3113
Problems of accelerated construction of roadbeds in polar areas. [Problemy skorostnogo sooruzheniia zemlianogo polotna v Zapoliar'e],
Freidin, IA.I., *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.9, In Russian.
Railroads, Continuous permafrost, Embankments, Thermokarst, Roadbeds, Earthwork, Frozen fines, Polar regions, Permafrost beneath structures.

39-3114
Experimental studies of stresses in embankments induced by trains. [Eksperimental'nye issledovaniia napriazhennogo sostoianiia nasypei ot poezdov],
Derbentsev, A.S., et al, *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.9-10, In Russian. 4 refs.
Smolin, IU.P.
Railroads, Embankments, Thermal stresses, Dynamic loads, Measuring instruments.

39-3115
Calculating the bearing ground beneath embankments according to the second group of ultimate design. [Programma rascheta osnovanii pod nasypiami po vtoroi gruppe predel'nykh sostoianii],
Lobanov, I.Z., *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.10-11, In Russian. 2 refs.
Railroads, Foundations, Embankments, Swamps, Ultimate strength.

39-3116
Bridge construction in petroleum provinces of western Siberia. [Mostostroenie v Zapadno-Sibirskom neftegazovom regione],
Koter, V.A., *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.12-14, In Russian.
Bridges, Winter concreting, Reinforced concretes, Railroads, Concrete placing, Cold weather construction, Grouting, Permafrost beneath structures.

39-3117
Bridge construction in Nefteyugansk. [Sooruzhenie mosta v Nefteiuganske],
Bialik, B.F., et al, *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.14-17, In Russian.
Kovalenko, G.A., Solokhin, V.F.
Bridges, Railroads, Piers, Reinforced concretes, Pile structures, Foundations, Swamps, USSR—Ob' River.

39-3118
Using corrugated-iron pipes in western Siberia. [Primenenie gofrirovannykh trub v Zapadnoi Sibiri],
Nikiforov, A.S., et al, *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.17, In Russian.
Kamentsev, V.P., Roiak, G.S.
Pipes (tubes), Bridges, Tundra, Forest tundra, Paludification, Petroleum transportation.

39-3119
River port construction in northern regions. [Problemy rechnogo portostroeniia v severnykh raionakh],
Baklanov, A.S., et al, *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.21-22, In Russian.
Goncharov, V.V., Poliakov, B.I.
Ports, Moorings, Transportation, Rivers, Helicopters, Petroleum industry, Permafrost beneath structures, Houses, Construction materials, Construction equipment.

39-3120
Construction of ports. [Stroitel'stvo porta],
Goncharov, V.V., *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.23-24, In Russian.
Swamps, Snow roads, Permafrost beneath rivers, Ports, Houses, Floating structures, Moorings, Plains, Transportation, Cold weather construction.

39-3121
Shore roads for unprotected water areas under conditions of Siberian rivers. [Naberezhnaia dlia nezashchishchennoi akvatorii v usloviiakh sibirskikh rek],
Dubin, A.A., *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.24-25, In Russian.
Shores, Concrete structures, Roads, Reinforced concretes, Moorings, Rivers, Ice loads, Ice erosion, Slope protection.

39-3122
Urban planning and construction of petroleum complexes. [Gradostroitel'stvo neftegazovogo kompleksa],
Sukhanov, N.V., *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.25-27, In Russian.
Urban planning, Transportation, Roads, Railroads, Industrial buildings, Residential buildings, Logistics, Permafrost beneath structures.

39-3123
Large panel residential buildings for Siberian conditions. [Krupnopanel'nye zhilye doma dlia uslovii Zapadnoi Sibiri],
Khabibulin, K.I., et al, *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.27-29, In Russian.
Ozhgibesov, IU.P., Prudkova, K.IU., Nikiforov, IU.P.
Prefabrication, Thermal insulation, Large panel buildings, Foundations, Walls, Residential buildings, Permafrost beneath buildings, Panels, Heating.

39-3124
Design of settlements for mobile crews. [Proektirovanie vakhtovykh poselkov],
Sobchenko, M.S., et al, *Transportnoe stroitel'stvo*, Apr. 1985, No.4, p.29-30, In Russian.
Odinokov, V.A.
Houses, Transportation, Modular construction, Continuous permafrost, Construction materials, Construction equipment.

39-3125
Antarctic exploration by airplane. [Antarktis-Forschung mit Flugzeugen],
Schmid, R., *Naturwissenschaftliche Rundschau*, Mar. 1985, 38(3), p.102-104, In German.
Exploration, Airplanes, Antarctica—Filchner Ice Shelf.
A brief review is given of the history of antarctic exploration and research and of German use of aircraft in the low temperatures and high winds of Antarctica. A renewed German interest in Antarctica in the 1980s manifested itself in the establishment of a year round station (Georg von Neumayer) and a major summer station on the Filchner Ice Shelf. The stations are supported by two aircraft: the smaller designed for logistics use as personnel and equipment transport to and from summer field camps. The larger craft is equipped and instrumented for aerial research projects. Both planes have the capability for long range flights between Bremerhaven and Antarctica.

39-3126
Apparently first-order transition between two amorphous phases of ice induced by pressure.
Mishima, O., et al, *Nature*, Mar. 7, 1985, 314(6006), p.76-78, 15 refs.
Calvert, L.D., Whalley, E.
Ice density, High pressure ice, Ice physics.

39-3127
Thermogenic hydrocarbons in surface sediments of the Bransfield Strait, Antarctic Peninsula.
Whiticar, M.J., et al, *Nature*, Mar. 7, 1985, 314(6006), p.87-90, 25 refs.
Suess, E., Wehner, H.
Sediments, Hydrocarbons, Natural gas, Geothermy, Antarctica—Bransfield Strait.
The authors discovered thermogenic hydrocarbons in unconsolidated Recent sediments from the King George Basin, Bransfield Strait, west Antarctica. These sediments possessed a marked petroliferous smell throughout the length of the 8.6 m gravity core. The basin sediments are glacial marine deposits dominated by turbidites and contain abundant autochthonous organic matter as a result of high seasonal primary productivity in this most fertile part of the circumpolar ocean. The maturation of this material into hydrocarbons may have been accelerated by the high geothermal gradient in the basin, associated with back-arc spreading created by the subduction of the Drake Plate into the South Shetland trench. Sediments in this rifted basin are frequently intruded by volcanic sills and dykes giving rise to acoustic features. The presence of these thermogenic hydrocarbons provides the first demonstration of active source rocks in Antarctica. (Auth.)

39-3128
Contribution of space observations to water resources management.
Symposium on the Contribution of Space Observations to Water Resources Studies and the Management of these Resources, Bangalore, May 29-June 9, 1979, Advances in space exploration: COSPAR symposium series, No.9, Oxford, Pergamon Press, 1980, 280p., Refs. passim. For selected papers see 39-3129 through 39-3133.
Salomonson, V.V., ed, Bhavsar, P.D., ed.
Snow cover distribution, Water reserves, Remote sensing, Snow hydrology, Snowmelt, Ice melting, Mountains, Mapping.

39-3129
Snow mapping from space platforms.
Itten, K.I., Symposium on the Contribution of Space Observations to Water Resources Studies and the Management of these Resources, Bangalore, May 29-June 9, 1979. Proceedings. Edited by V.V. Salomonson and P.D. Bhavsar. Advances in space exploration: COSPAR symposium series, No.9, Oxford, Pergamon Press, 1980, p.125-138, 25 refs.
Snow cover distribution, Remote sensing, Mapping, Water reserves, Photointerpretation, Cloud cover, Forest land.

39-3130
Problems of snow cover assessment: an approach using remote sensing techniques in a pilot project in the Beas River basin, Himachal Pradesh, India.
Vohra, C.P., et al, Symposium on the Contribution of Space Observations to Water Resources Studies and the Management of these Resources, Bangalore, May 29-June 9, 1979. Proceedings. Edited by V.V. Salomonson and P.D. Bhavsar. Advances in space exploration: COSPAR symposium series, No.9, Oxford, Pergamon Press, 1980, p.139-142, 7 refs.
Srivastava, G.S.
Snow cover distribution, Snow hydrology, Remote sensing, Glacier mass balance, Runoff, Water reserves, Climatic factors, Snowmelt, Ice melting, Mountains, Seasonal variations, India—Beas River.

39-3131
Eurasian snow cover extent: the NOAA satellite record, 1966-79.
Matson, M., et al, Symposium on the Contribution of Space Observations to Water Resources Studies and the Management of these Resources, Bangalore, May 29-June 9, 1979. Proceedings. Edited by V.V. Salomonson and P.D. Bhavsar. Advances in space exploration: COSPAR symposium series, No.9, Oxford, Pergamon Press, 1980, p.142-152, 12 refs.
Wiesnet, D.R., Berg, C.P.
Snow cover distribution, Remote sensing, Ice cover, Meteorological charts, Climatic factors.

39-3132
Studies of snow accumulation characteristics on Himalayan slopes.
Bagchi, A.K., Symposium on the Contribution of Space Observations to Water Resources Studies and the Management of these Resources, Bangalore, May 29-June 9, 1979. Proceedings. Edited by V.V. Salomonson and P.D. Bhavsar. Advances in space exploration: COSPAR symposium series, No.9, Oxford, Pergamon Press, 1980, p.153-156, 1 ref.
Snow line, Snow accumulation, Snow depth, Remote sensing, Slopes, Mountains, Altitude, Himalaya Mountains.

39-3133
Microwave emission properties of snow for monitoring hydrological parameters.
Schanda, E., et al, Symposium on the Contribution of Space Observations to Water Resources Studies and the Management of these Resources, Bangalore, May 29-June 9, 1979. Proceedings. Edited by V.V. Salomonson and P.D. Bhavsar. Advances in space exploration: COSPAR symposium series, No.9, Oxford, Pergamon Press, 1980, p.157-161, 5 refs.
Hofer, R., Mätzler, C.
Snow hydrology, Microwaves, Radiometry, Snow depth, Snow melting, Snow temperature, Mountains, Altitude, Spectra.

39-3134
Meteorites in antarctic ice. (*Des météorites* dans les glaces de l'Antarctique),
Cervelle, B., *Recherche,* Nov. 1984, 15(160), p.1454-1456, In French. 6 refs.
Ice sheets, Ice creep, Impurities, Antarctica.
The Japanese and American discoveries of large meteorite fields in the Yamato Mountains and Allan Hills are reviewed. The mechanisms leading to the accumulation of meteorites in specific locations are explained. Advances in chemical and isotopic analyses are described and possible lunar and Martian origins are considered for some of the meteorites.

39-3135
Why polar research. (Wozu Polarforschung?),
Hempel, G., *Erzmetall,* Dec. 1984, 37(12), p.577-584, In German with English summary.
Sea ice distribution.
The history and present state of the antarctic research program of the West German government is described. Antarctic geology, ecosystems, climate, and seasonal ice distribution are reviewed.

39-3136
Distribution of electrical parameters in upper layers of shelf, land, and fast ice near Novolazarevskaya Station.
Khokhlov, G.P., *IEEE journal of oceanic engineering,* Dec. 1984, OE-9(5), p.360-365, 7 refs.
Fast ice, Ice shelves, Firn, Ice electrical properties, Remote sensing, Antarctica—Novolazarevskaya Station.
Presented are the results of an experimental investigation of electrical parameters of glacier ice and first-year fast ice in the VHF frequency band, at the antarctic station Novolazarevskaya in the 27th Soviet Antarctic Expedition (1982-1983). Distributions of electrical parameters in the glaciers are obtained for ice, firn-ice, and cold-firn zones. These zones differ from each other in the physical characteristics of their upper layers in the glacier. The results of the measurements show the difference in distributions for these zones as well as the significant variability of the refractive index and the specific attenuation in the firn-ice and cold-firn zones. (Auth. mod.)

39-3137
***Dielectric properties on 72 K phase transition of* KOH-doped ice.**
Kawada, S., et al, *Physical Society of Japan. Journal,* Feb. 1985, 54(2), p.477-479, 5 refs.
Dohata, H.
Doped ice, Ice electrical properties, Ice crystal structure, Molecular structure, Proton transport, Dielectric properties, Phase transformations, Temperature effects, Ice relaxation.

39-3138
Epitaxial ice crystal growth on covellite (CuS), Pts. 1 and 2.
Cho, N., et al, *Journal of crystal growth,* 1984, 69(2/3), p.317-334, 52 refs.
Hallett, J.
Ice crystal growth, Ice crystal structure, Ice crystal optics, Water vapor, Ice accretion, Supersaturation, Ice sublimation, Atmospheric pressure, Vapor diffusion, Supersaturation, Temperature effects.

39-3139
Size and perfection of crystals in lake ice.
Barns, R.L., et al, *Journal of crystal growth,* Jan.-Feb. 1985, 71(1), p.104-110, 25 refs.
Laudise, R.A.
Lake ice, Ice crystal structure, Ice crystal nuclei, Ice sampling, Ice air interface, Grain size.

39-3140
Phytoplankton bloom produced by a receding ice edge in the Ross Sea: spatial coherence with the density field.
Smith, W.O., et al, *Science,* Jan. 11, 1985, 227(4683), p.163-166, Numerous refs.
Nelson, D.M.
Sea ice, Ice edge, Plankton, Water chemistry, Marine biology, Antarctica—Ross Sea.
Measurements of chlorophyll, particulate carbon, and biogenic silica concentrations near a receding ice edge off the coast of Victoria Land indicated the presence of a dense phytoplankton bloom. The bloom extended 250 kilometers from the ice edge and was restricted to waters where the melting of ice had resulted in reduced salinity. The region involved was one of enhanced vertical stability, which may have favored phytoplankton growth, accumulation, or both. Epontic algae released from melting ice may have served as an inoculum for the bloom. Ratios of organic carbon to chlorophyll and biogenic silica to carbon were unusually high, resulting in high biogenic silica concentrations despite only moderately high chlorophyll levels (Auth.)

39-3141
Radar determination of snowfall rate and accumulation.
Boucher, R.J., et al, *Journal of climate and applied meteorology,* Jan, 1985, 24(1), p.68-73, 16 refs.
Wieler, J.G.
Snowfall, Snow accumulation, Snow water equivalent, Radar echoes.

39-3142
Albedo of a dissipating snow cover.
Robinson, D.A., et al, *Journal of climate and applied meteorology,* Dec. 1984, 23(12), p.1626-1634, 25 refs.
Kukla, G.
Snow cover effect, Albedo, Radiation, Vegetation.

39-3143
Thermodynamic coupled ice-ocean model of the marginal ice zone.
Röed, L.P., *Journal of physical oceanography,* Dec. 1984, 14(12), p.1921-1929, 14 refs.
Sea ice, Ice water interface, Thermodynamic properties, Heat flux, Models.

39-3144
Paleoclimatic research and models.
Workshop on Paleoclimatic research and models, Brussels, December 15-17, 1982, Dordrecht, D. Reidel, 1983, 205p., Refs. passim. For selected papers see 39-3145 through 39-3150 or F-31741, I-31740 and I-31742.
Ghazi, A., ed.
DLC QC884.P34
Paleoclimatology, Glaciation, Ice sheets.
About 35 paleoclimatologists from 10 countries participated in the workshop to discuss and identify abrupt climate changes, initiation of glaciation, and glaciated polar regions and their impact on global climate. This volume contains the outcome of the workshop in the form of full texts or summaries of the presentations, three of which deal with Antarctica.

39-3145
***Actual paleoclimatic problems from a climatologist's* viewpoint.**
Flohn, H., Paleoclimatic research and models: report and proceedings of the workshop held in Brussels, December 15-17, 1982. Edited by A. Ghazi, Dordrecht, D. Reidel, 1983, p.17-33, Refs. p.27-29.
DLC QC884.P34
Models, Paleoclimatology, Glaciation.
Reviewed are the Little Ice Age, the Late Glacial and Early Holocene, the building and decay of the Last Glacial, the Last Interglacial, and the ice-free Arctic versus glaciated Antarctic in the late Cenozoic. The essential paleoclimatic facts are summarized. Some examples from the transition from Late-Glacial to Early-Holocene are discussed as of possible use for further research.

39-3146
Late-Glacial climatic history from ice cores.
Oeschger, H., et al, Paleoclimatic research and models: report and proceedings of the workshop held in Brussels, December 15-17, 1982. Edited by A. Ghazi, Dordrecht, D. Reidel, 1983, p.95-107, 23 refs.
DLC QC884.P34
Ice cores, Climatic changes, Oxygen isotopes, Carbon dioxide, Isotope analysis, Glaciation, Paleoclimatology, Drill core analysis, Chemical analysis.

39-3147
Do N(15) variations in peat bogs allow statements of climatic changes in the past.
Schleser, G.H., Paleoclimatic research and models: report and proceedings of the workshop held in Brussels, December 15-17, 1982. Edited by A. Ghazi, Dordrecht, D. Reidel, 1983, p.124-128, 6 refs.
DLC QC884.P34
Climatic changes, Peat, Swamps, Isotope analysis, Paleoclimatology, Chemical analysis, Periodic variations, Statistical analysis.

39-3148
Ice-sheet modelling for climate studies.
Oerlemans, J., Paleoclimatic research and models: report and proceedings of the workshop held in Brussels, December 15-17, 1982. Edited by A. Ghazi, Dordrecht, D. Reidel, 1983, p.157-163, Refs. p.163.
DLC QC884.P34
Mathematical models, Ice sheets, Ice cover thickness.
Ice-sheet response to changing environmental conditions is discussed. A schematic picture showing a north-south cross section of a Northern Hemisphere ice sheet, and a typical steady-state diagram for bounded ice sheets of Greenland and Antarctica are presented and analyzed. A numerical model is applied to the Antarctic Ice Sheet which contains the essential mechanism leading to the ice-thickness variations observed

39-3149
Sensitivity of general circulation models.
Hills, T.S., Paleoclimatic research and models: report and proceedings of the workshop held in Brussels, December 15-17, 1982. Edited by A. Ghazi, Dordrecht, D. Reidel, 1983, p.181-192, 6 refs.
DLC QC884.P34
Sea ice distribution.
A number of experiments with atmospheric general circulation models to investigate the effect on the modelled atmosphere of changing the prescribed sea-ice cover are reviewed. The Simmonds (1979) experiment using a model of the Southern Hemisphere, run using mean September ice conditions and repeating the integration using March ice conditions instead, is confirmed by an experiment where July to September of one annual cycle integration with a 5-level general circulation model was repeated with antarctic sea ice removed north of 60°S.

39-3150
Numerical modelling of Arctic sea ice: review and preliminary results.
Van Ypersele, J.P., Paleoclimatic research and models: report and proceedings of the workshop held in Brussels, December 15-17, 1982. Edited by A. Ghazi, Dordrecht, D. Reidel, 1983, p.193-199, 11 refs.
DLC QC884.P34
Sea ice distribution, Climatic changes, Ice cover effect, Paleoclimatology, Glaciation, Ice cover thickness, Ice thermal properties, Ice mechanics, Albedo, Mathematical models, Heat transfer.

39-3151
Arctic ice island and sea ice movements and mechanical properties. First quarterly report, Oct. 1-Dec. 31, 1983.
Sackinger, W.M., et al, *U.S. Dept. of Energy. Morgantown Energy Technology Center.* (*Report*), 1984, DOE/MC/20037-1631, 28p. + illus., DE84 014324, 25 refs.
Stringer, W.J.
Ice mechanics, Ice islands, Sea ice distribution, Ice edge, Remote sensing, Icing, Offshore structures, Sea spray, Ice shelves, Pressure ridges, Protective coatings.

39-3152
Arctic ice island and sea ice movements and mechanical properties. Second quarterly report, Jan. 1-March 31, 1984.
Sackinger, W.M., et al, *U.S. Dept. of Energy. Morgantown Energy Technology Center.* (*Report*), 1984, DOE/MC/20037-1644, 175p. + 3 appends., DE84 016323, 23 refs.
Stringer, W.J., Serson, H.
Ice mechanics, Ice islands, Sea ice distribution, Ice edge, Remote sensing, Icing, Offshore structures, Sea spray, Ice shelves, Pressure ridges, Protective coatings.

39-3153
Marine biology of polar regions and effects of stress on marine organisms.
Gray, J.S., ed, European Marine Biology Symposium, 18th Oslo, Aug. 1983. Proceedings, Chichester, U.K., John Wiley & Sons, 1985, 639p., For selected papers see 39-3154 through 39-3156, or B-31745 through B-31753.
Christiansen, M.E., ed.
DLC QH95.56.E87 1983
Meetings, Marine biology, Polar regions.
Various creatures whose lives are tightly bound to sea ice and cold waters are examined in these papers. Physiological, morphological, and behavioral characteristics and adaptations present insights as to how the creatures survive and thrive in such harsh and stressful environments.

39-3154
Model of phytoplankton in the marginal sea-ice zone of the Barents Sea.
Slagstad, D., Marine biology of polar regions and effects of stress on marine organisms, edited by J.S. Gray and M.E. Christiansen, Chichester, U.K., John Wiley & Sons, 1985, p.35-48, 8 refs.
DLC QH95.56.E87 1983
Sea ice, Ice edge, Plankton, Models, Marine biology, Biomass, Barents Sea.

39-3155
Influence of ice and hydrographic conditions on the development of phytoplankton in the Barents Sea.
Rey, F., et al, Marine biology of polar regions and effects of stress on marine organisms, edited by J.S. Gray and M.E. Christiansen, Chichester, U.K., John Wiley & Sons, 1985, p.49-63, 25 refs.
Loeng, H.
DLC QH95.56.E87 1983
Sea ice, Plankton, Ice cover effect, Hydrography, Biomass, Ice edge, Barents Sea.

39-3156
Sea-ice algal communities in the Weddell Sea: species composition in ice and plankton assemblages.
Garrison, D.L., et al, Marine biology of polar regions and effects of stress on marine organisms, edited by J.S. Gray and M.E. Christiansen, Chichester, U.K., John Wiley & Sons, 1985, p.103-122, 40 refs.
Buck, K.R.
DLC QH95.56.E87 1983
Sea ice, Algae, Plankton, Marine biology, Cryobiology, Antarctica—Weddell Sea.
In the late austral summer of 1980, samples were collected from the water column, from young sea ice, and from older ice floes in the Weddell Sea. Algae were identified in these environments using light and electron microscopy. Cluster analysis was used to identify the relationship among species and to compare assemblages among samples. Most species were found in both water and ice but none were exclusively associated with ice. Planktonic diatoms were numerically important in both water and ice. The average similarity among assemblages in the water column was 54%, and some spatial heterogeneity was found among samples from open water, the ice edge, and under heavy pack ice cover. Assemblages in young sea ice were essentially identical to those from adjacent water samples. The study shows that the same species occupy both ice and water environments in the Weddell Sea. Such similarity can be explained by a cycle where algal cells are regularly trapped and survive in ice, and are released back into the water column for an extended period of seasonal melting. (Auth.)

39-3157
Soil investigation in Antarctica, 1969-70.
Claridge, G.C., *New Zealand soil news*, June 1970, 18(2), p.101-104.
DLC S599.75.A1N47
Soil microbiology, Soil analysis.
Ten soil samples, as well as a number of lichen samples, collected for biological analysis in the vicinity of the Scott Glacier area, are discussed. Of the ten samples, two appeared to have no soil life, neither lichens, bacteria nor protozoa. These were samples of gravel, sand and silt. Small populations of bacteria, less than 100/g, were present in two soils without lichens and in one coarse textured sample of gravel and sand with lichens. Much higher bacterial populations, over 1,000/g, occurred in two samples of wet glacial silt and gravel without lichens and in three samples of gravel, sand, and silt or fine silt with lichens. Protozoa appeared to be represented only by small amoebae which were present in three of the samples with large bacterial populations. One of the samples, the one with the largest bacterial population, also had a rotifer. The bacteria appeared to be able to grow both at 4 and 24 deg.

39-3158
Civil engineering in the Arctic offshore.
Conference Arctic '85, New York, American Society of Civil Engineers, 1985, 1259p., Refs. passim. For selected papers see 39-3159 through 39-3255.
Bennett, F.L., ed, Machemehl, J.L., ed.
Offshore structures, Offshore drilling, Ice loads, Sea ice distribution, Ice conditions, Caissons, Ice solid interface, Ice mechanics, Ice strength, Ice pressure, Permafrost beneath structures, Soil strength, Meetings.

39-3159
Molikpaq development at Tarsiut P-45.
Jefferies, M.G., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.1-27, 12 refs.
Stewart, H.R., Thomson, R.A.A., Rogers, B.T.
Artificial islands, Caissons, Ice loads, Ice conditions, Sea ice distribution, Offshore structures, Offshore drilling, Engineering, Cost analysis, Platforms, Beaufort Sea.

39-3160
Overview of artificial island design and construction in the Arctic.
Wang, J.L., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.28-38, 12 refs.
Peters, D.B.
Artificial islands, Ice loads, Offshore structures, Offshore drilling, Caissons, Ocean waves, Design criteria, Slope stability, Gravel, Protection, Bearing strength, Beaufort Sea.

39-3161
Geotechnical features of Fur Seal Island design.
Luscher, U., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.39-47, 8 refs.
Akky, M.R., Egan, J.A., Youngs, R.R., Sheets, J.
Artificial islands, Ice loads, Soil strength, Shear strength, Settlement (structural), Ocean bottom, Design, Marine geology, Ice conditions, Stability, Beaufort Sea.

39-3162
Arctic island construction.
Robertson, F.P., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.48-56, 7 refs.
Artificial islands, Slope protection, Ice loads, Ocean waves, Freeze thaw cycles, Offshore structures, Impact strength, Abrasion, Beaufort Sea.

39-3163
Oceanwheel artificial island.
Capron, M.E., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.57-65, 5 refs.
Artificial islands, Ice loads, Ocean bottom, Ice floes, Design, Impact strength, Models, Platforms.

39-3164
Modular construction technology for arctic islands.
Buslov, V.M., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.66-74, 4 refs.
Artificial islands, Caissons, Floating structures, Ice loads, Design, Foundations, Walls.

39-3165
Contractor looks at slope protection for arctic offshore artificial islands.
Chow, W.Y., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.102-110, 10 refs.
Robertson, F.P., Van Garderen, A.P.
Slope protection, Artificial islands, Ice loads, Offshore structures, Soil erosion, Ocean waves, Seasonal variations.

39-3166
Arctic offshore site investigations.
Stangl, K.O., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.111-121, 12 refs.
Mahmood, A.
Offshore drilling, Offshore structures, Ice conditions, Cold weather operation, Equipment, Pack ice, Exploration, Platforms, United States—Alaska—Prudhoe Bay.

39-3167
Electrical resistivity techniques for offshore arctic geotechnical engineering applications.
Corwin, R.F., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.137-143, 12 refs.
Soil physics, Electrical resistivity, Ground ice, Marine geology, Ocean bottom, Engineering, Mapping, Grain size, Soil water, Clay soils, Beaufort Sea.

39-3168
Determining soil properties by electric cone penetrometer.
Auxt, J.A., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.144-152, 5 refs.
Nolan, T.A., Jr.
Permafrost preservation, Oil wells, Drilling, Soil erosion, Soil strength, Penetrometers, Gravel, Equipment, United States—Alaska—Prudhoe Bay.

39-3169
Rapid deployment system: a method for conducting in situ soil tests from moving ice in the arctic offshore.
Mahar, L.J., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.169-177, 1 ref.
Ocean bottom, Soil surveys, Ice mechanics, Ice conditions, Ice cover effect, Penetrometers, Pack ice, Drift, Tests, Beaufort Sea.

39-3170
Analysis of a production well through sediments containing gas hydrates.
Wittebolle, R.J., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.178-184.
Sego, D.C.
Permafrost distribution, Hydrates, Oil wells, Ground thawing, Frozen ground thermodynamics, Stratigraphy, Temperature distribution, Natural gases, Sands.

39-3171
Influence of artificial island side-slopes on ice-ride-up and pile-up.
Hocking, G., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, 185-192, 10 refs.
Mustoe, G.G.W., Williams, J.R.
Artificial islands, Ice pileup, Ice override, Slope protection, Beaches, Offshore structures, Design.

39-3172
Estimation of ice loads from caisson deformations Gulf Canada Molikpaq.
Erbatur, M.F., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.193-201.
Ice loads, Caissons, Offshore structures, Models, Steel structures, Design.

39-3173
Dynamic global forces on an offshore structure from multi-year ice floe impacts.
Hocking, G., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.202-210, 16 refs.
Williams, J.R., Mustoe, G.G.W.
Offshore structures, Ice loads, Dynamic loads, Impact strength, Ice cracks, Artificial islands, Fracturing, Ice solid interface, Ice floes, Platforms.

39-3174
Ice floe impact force on vertical sided structures.
Cox, J.R., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.211-219, 11 refs.
Ice loads, Ice floes, Offshore structures, Impact strength, Ice solid interface, Fracturing, Ice cracks, Ice breakup, Analysis (mathematics).

39-3175
Ice forces due to impact loading on a slope structure.
Evans, R.J., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.220-229, 4 refs.
Parmerter, R.R.
Ice loads, Ice pressure, Offshore structures, Impact strength, Slope orientation, Dynamic loads, Ice floes, Ice override, Ice solid interface, Ice mechanics, Analysis (mathematics).

39-3176
Ice-structure interaction of an offshore platform.
Powell, G., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.230-238, 2 refs.
Schricker, V., Row, D., Hollings, J., Sause, R.
Ice solid interface, Offshore structures, Ice loads, Impact strength, Ice pressure, Ice floes, Ice models, Design, Platforms.

39-3177
Method for weakening the ice cover in northern rivers.
Manikian, V., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.239-250, 7 refs.
McDonald, G.N.
Ice cover strength, River ice, Ice cutting, Heat transfer, Ice melting, Ice temperature, Snow removal, Ice breakup, Ice sublimation.

39-3178
Role of ice gouging in determining global forces on arctic structures.
Bea, R.G., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.251-266, 30 refs.
Puskar, F.J., Barnes, P.W., Reimnitz, E.
Ice loads, Offshore structures, Ice scoring, Impact strength, Ice conditions, Ice shelves, Ocean bottom.

39-3179
Ice loads on structures with compound slopes.
Coon, M.D., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.267-275, 6 refs.
Pizzano, B.A.
Ice loads, *Offshore structures*, Slope *orientation*, Ice override, Offshore drilling, Analysis (mathematics).

39-3180
Iceberg interactions with offshore structures.
Isaacson, M. de S.Q., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.276-284, 15 refs.
Icebergs, Offshore structures, Ice loads, Ice solid interface, Drift, Ice pressure, Ice mechanics, Ocean waves, Compressive properties.

39-3181
Logistics for structures sealifted to the Arctic.
Ganguly, P., et al, Conference Arctic '85. Proceedings. *Civil engineering in the Arctic offshore.* Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.285-293.
Ashford, R.A.
Logistics, Marine transportation, Ice conditions, Icebreakers, Ice navigation, Equipment, Construction materials, United States—Alaska—Prudhoe Bay.

39-3182
Design of an icebreaking offshore supply vessel.
Seligman, A.R., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.294-308, 5 refs.
Zahn, P.
Icebreakers, Ice breaking, Ice conditions, Ice navigation, Ships, Design.

39-3183
Single point mooring in ice infested waters.
Pollack, J., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.309-322.
Moorings, Ice loads, Ice conditions, Pressure ridges, Design.

39-3184
Tanker mooring/loading systems for northern offshore arctic regions.
Manoudakis, C.P., et al, Conference Arctic '85. Proceedings. *Civil engineering in the Arctic offshore.* Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.323-336, 52 refs.
White, G.C., Milano, V.R.
Moorings, Loading, Tanker ships, Ice conditions, Design, Crude oil.

39-3185
Oilspill response technology for the Arctic.
Shafer, R.V., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.354-361, 10 refs.
Oil spills, Ice conditions, Ice cover effect, Waste disposal, Water temperature, Countermeasures, Logistics.

39-3186
Probabilistic description of ice forces on an offshore arctic structure.
Winkler, M.M., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.373-385, 4 refs.
Reece, A.M., Kreider, J.R., Ward, E.G., Boaz, I.B.
Ice loads, Offshore structures, Ice mechanics, Ice floes, Models, Computer applications, Seasonal variations, Ice solid interface.

39-3187
Spatial analysis of ice charts.
Veneziano, D., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.386-394, 11 refs.
Chouinard, L.
Sea ice distribution, Ice conditions, Ice mechanics, Charts, Beaufort Sea.

39-3188
Utilizing design events within risk-based design.
Dunwoody, A.B., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.395-402, 1 ref.
***Ice loads, Offshore structures*, Ice floes, Design criteria, Wind factors, Ocean waves, Earthquakes.**

39-3189
Selection of environmental design criteria for arctic structures.
Myers, P.E., Conference Arctic '85. Proceedings. *Civil engineering in the Arctic offshore.* Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.403-411, 16 refs.
Ice loads, Offshore structures, Ice conditions, Ice mechanics, Impact strength, Design criteria, Velocity, Ice floes.

39-3190
Probabilistic approaches to arctic offshore engineering.
Allyn, N.F.B., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.412-420, 7 refs.
Bein, P., Tseng, J.
Offshore structures, Ice loads, Ice floes, Ice strength, Engineering, Pressure ridges, Ice solid interface, Design, Ice pressure.

39-3191
Probabilistic design of gravity foundations for arctic offshore structures.
Vivatrat, V., et al, Conference Arctic '85. Proceedings. *Civil engineering in the Arctic offshore.* Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.421-429, 11 refs.
Slomski, S., Watt, B.J.
Offshore structures, Artificial islands, Ice loads, Caissons, Soil strength, Design, Foundations, Forecasting, Stability, Time factor.

39-3192
Risk assessment of sea bottom scouring using fuzzy set theory.
Thiel, C.C., Jr., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.430-438, 8 refs.
Singh, J.P., Boissonnade, A.C.
Ice scoring, Underground pipelines, Ocean bottom, Soil strength, Safety, Models, Bottom sediment.

39-3193
Route thaw settlement: a probabilistic evaluation.
Vita, C.L., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.439-446, 10 refs.
Settlement (structural), Ground thawing, Subsea permafrost, Underground pipelines, Permafrost structure, Forecasting, Design.

39-3194
Creep properties of ice: theory and experiment.
Vinogradov, A.M., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.447-455, 30 refs.
Ice creep, Rheology, Viscoelasticity, Ice mechanics, Analysis (mathematics), Theories.

39-3195
Calculation of ice forces on arctic structures.
Bohon, W.M., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.456-464, 5 refs.
Weingarten, J.S.
Ice loads, Offshore structures, Ice strength, Ice pressure, Compressive properties, Ice floes, Strains, Ice solid interface.

39-3196
***Effect of sample orientation* on the compressive strength of multi-year pressure ridge ice samples.**
Richter-Menge, J.A., et al, MP 1877, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.465-475, 13 refs.
Cox, G.F.N.
Pressure ridges, Compressive properties, Ice strength, Impact strength, Strains, Porosity, Ice sampling, Beaufort Sea.
Matched pairs of horizontal and vertical sea ice samples were taken from a multi-year pressure ridge in the Beaufort Sea. Each pair was tested in uniaxial constant strain-rate compression to evaluate the effect of sample orientation on the compressive strength. The results indicate that sample orientation must be considered in the interpretation of ridge compressive strength data.

39-3197
Triaxial compression testing of ice.
Cox, G.F.N., et al, MP 1878, Conference Arctic '85. Proceedings. *Civil engineering in the Arctic offshore.* Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.476-488, 11 refs.
Richter-Menge, J.A.
Ice strength, Compressive properties, Stress, Strain diagrams, Tests, Measuring instruments.
Procedures have been refined for performing constant-strain-rate triaxial tests on ice samples. The equipment is designed such that the confining pressure-axial stress ratio remains constant. *Sample axial displacements are measured inside the cell* on the sample and outside the cell between the cell and the loading piston. In addition to reviewing the development of the equipment and testing procedures, data are presented to illustrate the problems of using outside displacement measurements. In general, *direct axial displacement measurements on the sample are essential* to obtain accurate test strain rates and ice moduli. This is particularly true for brittle ice at low temperatures, high strain rates, and high confining pressures.

39-3198
Centrifugal modeling of ice forces on single piles.
Vinson, T.S., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.489-497, 7 refs.
Wurst, P.L.
Ice pressure, Piles, Ice models, Offshore structures, Ice floes, Tests.

39-3199
SHADS: mobile Arctic drilling platform.
Steddum, R.E., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.498-506.
Hershey, E.E., Bruce, J.C.
Offshore structures, Offshore drilling, Ice mechanics, Floating structures, Bearing strength, Foundations, Seasonal variations, Platforms, Beaufort Sea.

39-3200
Santa Fe's mobile Arctic drilling barge.
Johnson, G.L., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.507-516, 4 refs.
Field, A.J., Whyte, D.G.
Ice conditions, Offshore drilling, Offshore structures, Ice mechanics, Ice cover thickness, Ocean waves, Design criteria, Soil strength, Bearing strength.

39-3201
Pioneering developments in Arctic dredging.
LaVielle, C.C., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.517-523.
Burke, W.W., Pita, F.W.
Dredging, Subsea permafrost, Sands, Frost resistance, Frozen ground, Gravel.

39-3202
Arctic earth materials for offshore construction in Alaska.
Schlegel, M.C., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.524-540, 2 refs.
Mahmood, A.
Offshore structures, Construction materials, Frozen ground, Permafrost, Sands, Gravel, Sediments, Bottom sediment, Earthwork, Settlement (structural), Ground thawing.

39-3203
Constructibility of Arctic offshore structures.
Gerwick, B.C., Jr, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.541-550.
Offshore structures, Ice loads, Soil strength, Ice overside, Ice erosion, Ocean waves, Countermeasures.

39-3204
Strength and deformation behavior of frozen saline sand and gravel.
Mahar, J.J., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.557-565, 2 refs.
Nickerl, B.J.V.
Frozen ground strength, Sands, Gravel, Saline soils, Frozen ground mechanics, Salinity, Deformation, Construction materials, Temperature effects, Density (mass volume), Strains.

39-3205
Shear strength in the zone of freezing in saline soils.
Chamberlain, E.J., MP 1879, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.566-574, 4 refs.
Frozen ground strength, Saline soils, Shear strength, Deformation, Soil freezing, Clay soils, Sands, Sea water, Temperature effects, Tests.
Uniaxial direct shear strength tests were conducted on sand and clay soil samples as they were freezing. Samples prepared with seawater and distilled water were tested in a modified triaxial device at shear plane temperatures ranging from 0 C to -8 C. The shear strengths of the freezing saline clay and sand samples were observed to be significantly less than shear strengths of the fresh water samples. For the clay samples, the reductions could be accounted for principally by the 2.8 C freezing point depression caused by the salts in the soil. The shear strength curves nearly paralleling each other and coincident when plotted versus temperature of freezing. In a similar plot for the sands, the two curves are considerably different in cohesive strength at 0 C. It is concluded that the shear strength reduction of the saline clay soil is largely the result of increased unfrozen water content. It is suggested that a knowledge of unfrozen water content relationships for various soils will probably allow better predictive capabilities for the shear strength in the freezing zone.

39-3206
Time dependent material properties due to solute redistribution in frozen marine soils.
Nickerl, B.J.V., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.575-583, 15 refs.
Weaver, J.S., Vinson, T.S., Watson, R.C.
Frozen ground strength, Saline soils, Ground ice, Ocean bottom, Deformation, Salinity, Soil temperature, Soil water migration, Convection, Solutions, Time factor.

39-3207
Isochronic constitutive modeling of frozen soil.
Sandler, K.K., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.584-592, 2 refs.
Reddy, D.V.
Subsea permafrost, Frozen ground strength, Foundations, Stress strain diagrams, Artificial islands, Mathematical models, Sands, Time factor.

39-3208
Deformation properties of warm undersea permafrost.
Shields, D., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.593-603, 4 refs.
Domaschuk, L., Fensury, H., Kenyon, R.
Subsea permafrost, Soil creep, Frozen ground mechanics, Pressure, Rheology, Sands, Tests, Strains, Time factor.

39-3209
Three-dimensional analysis of an artificial island.
Evgin, E., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.617-625, 5 refs.
Morgenstern, N.R.
Artificial islands, Ice loads, Stresses, Ice mechanics, Offshore structures, Deformation, Caissons, Ice pressure, Design.

39-3210
Borrow resource studies in near-shore areas of Alaska's North Slope.
Williams, D.C., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.626-633.
Zeman, A.R., Holsten, D.B.
Offshore drilling, Ice cover strength, Exploration, Natural resources, Environmental protection, Tundra, Construction materials, Sands, Gravel, United States--Alaska--North Slope.

39-3211
Ice as a construction material in the offshore Arctic.
Duthweiler, F.C., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.634-642, 13 refs.
Utt, M.E.
Ice (construction material), Ice islands, Grounded ice, Ice growth, Offshore drilling, Sea ice, Flooding, Ice roads, Design.

39-3212
Failure modes in concrete structures due to ice load.
Iding, R.H., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.643-652.
Bresler, B., Gerwick, B.C., Jr.
Offshore structures, Concrete structures, Ice loads, Floating ice, Stress strain diagrams, Deformation, Compressive properties, Concrete strength.

39-3213
Response of concrete shell panels to simulated impact.
Arockiasamy, M., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.653-670, Refs. p.668-670.
Swamidas, A.S.J., Munaswamy, K., Hamlyn, D.
Offshore structures, Ice loads, Concrete structures, Impact strength, Shear stress, Construction materials, Reinforced concretes, Flexural strength, Ocean waves, Fatigue (materials).

39-3214
Fatigue damage for reinforced concrete offshore structures.
Shah, S.P., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.671-679, 16 refs.
Offshore structures, Fatigue (materials), Concrete structures, Reinforced concretes, Ice loads, Ocean waves, Stresses, Damage, Cracking (fracturing).

39-3215
Microsilica concrete: properties and applications.
Radjy, F.F., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.680-688, 18 refs.
Loeland, K.E.
Offshore structures, Concrete structures, Concrete durability, Concrete strength, Permeability, Concrete aggregates.

39-3216
Low friction and adfreeze coatings.
Alliston, G.R., Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.689-697, 5 refs.
Icebreakers, Protective coatings, Adhesion, Metal ice friction, Countermeasures, Ice conditions, Dielectric properties.

39-3217
Design and model testing of an Arctic seawater intake for sedimentation and wave effects.
Cox, J.C., et al, Conference Arctic '85. Proceedings. Civil engineering in the Arctic offshore. Edited by F.L. Bennett and J.L. Machemehl, New York, American Society of Civil Engineers, 1985, p.714-722, 4 refs.
Behnke, D.L., Grosskopf, W.G., Machemehl, J.L.
Water intakes, Ice cover effect, Sedimentation, Ocean waves, Models, Design, Wind velocity, Water level, Ocean currents.

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Original deposits are distinguished from occasional deposits left by glaciers during low sea levels and subsequently submerged and reworked by marine processes. The origin of recent glacial-marine deposits is both glacial, when they are formed by deposition under ice shelves, and glaciel, when deposition of a part of the debris is related to drift ice. In respect to the morphological environment, glacial-marine deposits are called proximal glacial-marine deposits, when sediments are scattered in front of glaciers; stranded drift ice deposits, when debris are abandoned by ice floe stranded on the bottom in nearshore zones; distal glacial-marine deposits, when debris are widely scattered over the sea bottom by the melting at random of drift ice. The occurrence of coarse debris in submerged and emerged ancient marine deposits has allowed the authors to recognize at least four main periods of glacio-marine sedimentation. Evidence of glacio-marine deposition is reviewed for the Plio-Pleistocene period, the late-Paleozoic era, the late-Ordovician period and the Eocambrian era, and is considered under the paleoclimatic aspect (length and importance of cold climates) and the paleographic aspect (continents and oceans distribution). A map of recent and ancient glacial-marine features is offered. (Auth.)

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Analysis of historical evidence of climatic change in western and northern Canada.
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Climatic changes, Paleoclimatology, Freezing, Ice breaking, Snowfall, Ice conditions, River ice, Sea ice distribution, Climatic factors.

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Impact of climatic variation on boreal forest biomass production.
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Biomass, Climatic changes, Environmental impact, Trees (plants), Paleoclimatology, Polar regions.

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Ice cores, Climatic changes, Drill core analysis, Paleoclimatology, Snow impurities, Isotope analysis, Temperature variations, Canada, Greenland.

39-3283
Air-entraining admixtures: inexpensive insurance against damage caused by freezing and thawing. *Concrete construction*, Apr. 1985, 30(4), p.351-353, 3 refs.
Concrete durability, Freeze thaw cycles, Air entrainment, Concrete admixtures.

39-3284
Variation of ice strength within and between multiyear pressure ridges in the Beaufort Sea.
Weeks, W.F., *Journal of energy resources technology*, June 1985, 107(2), p.167-172, 6 refs. For another source see 38-2036, and MP 1680.
Ice strength, Pressure ridges, Compressive properties, Porosity, Tests.
A recent series of tests on the uniaxial compressive strength of ice samples taken from multiyear pressure ridges allows the testing of several hypotheses concerning the variation in strength within and between ridges. The data set consists of 218 strength tests performed at two temperatures (-5 and -20 C) and two strain rates (.001 and .00005/s). There was no significant difference between the strength of the ice from the ridge sails and the ice from the ridge keels when tested under identical conditions. As the total porosity of the ice from the sails is higher by 40 percent than the ice from the keels, the lack of a significant difference is believed to result from the large variations in the structure of the ice which occur randomly throughout the cores. A three-level analysis of variance model was used to study the variations in strength between 10 different ridges, between cores located side by side in a given ridge, and between samples from the same core. In all cases the main factor contributing to the observed variance was the differences within cores. This is not surprising considering the rather extreme local variability in the structure of ice in such ridges. There was no reason at the 5 percent level of significance to doubt the hypothesis that the different cores at the same site and and the different ridges have equal strength means.

39-3285
Technique for producing ice from NaCl brine for studying fundamental deformation behavior.
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Pharr, G.M.
Saline soils, Frozen ground mechanics, Ice sintering, Ice formation, Brines, Salt ice, Deformation, Microstructure, Ground ice, Ice crystal structure, Liquid phases, Tests.

39-3286
Deterioration of floating ice covers.
Ashton, G.D., *Journal of energy resources technology*, June 1985, 107(2), p.177-182, 18 refs. For another source see 38-2020 and MP 1676.
Ice deterioration, Floating ice, Ice cover strength, Ice melting, Heat transfer, Solar radiation, Albedo, Thermal regime, Porosity.
The deterioration of floating ice covers is analyzed to determine under what conditions the ice cover loses strength due to thermal melting. The analysis considers the interaction between sensible heat transfer and long wave radiation loss at the surface, the surface albedo, the short wave radiation penetration and absorption and the unsteady heat conduction within the ice. The thermal analysis then leads to a determination of the porosity of the ice that allows strength analysis to be made using beam-type analyses. The results provide criteria to determine when and how rapidly the ice cover loses strength and under what conditions it will regain the original strength associated with an ice cover of full integrity.

39-3287
Use of the cone penetration test for the design of piles in permafrost.
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39-3288
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Offshore structures, Ice loads, Ice conditions, Ocean waves, Seismic surveys, Foundations, Temperature effects, Design, Offshore drilling, Dynamic loads, Ice mechanics.

39-3289
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Bradshaw, M.T.
Subsea permafrost, Well casings, Permafrost thermal properties, Ground thawing, Soil creep, Soil mechanics, Compressive properties, Tensile properties, Strains.

39-3290
Creep of frozen sand under isotropic and deviatoric components of stress.
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Knutsson, S., Shields, D.H., Rahman, M.G.
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39-3291
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39-3292
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Slope processes, Periglacial processes, Mapping, Geocryology, Permafrost distribution.

39-3293
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39-3294
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Popova, E.P.
River basins, Mountain soils, Forest soils, Podsol, Loams, Vegetation patterns, Soil composition, Soil chemistry, Soil water, Plant ecology.

39-3295
Groups of nitrogen, phosphorus and humus compounds in soils of clear-cut areas in birch forests of southern taiga. [Gruppy azota, fosfora, gumusovykh soedinenii v pochvakh sploshnykh vyrubok bereziakov iuzhnoi taigi],
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Terent'eva, E.N.
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39-3296
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39-3297
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39-3300
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39-3301
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Reinforced concretes, Industrial buildings, Concrete admixtures, Winter concreting, Sewage, Concrete structures, Water treatment, Frost resistance.

39-3302
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Boreholes, Wells, Permafrost thermal properties, Frozen ground temperature, Temperature distribution.

39-3304
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Well casings, Ice pressure, Ground ice, Deformations, Drilling fluids, Freezing.

39-3305
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39-3309
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Logistics, Modular construction, Construction materials, Mobile equipment, Cements, Residential buildings, Concrete aggregates, Industrial buildings, Prefabrication, Cold weather construction, Finland.

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39-3311
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39-3312
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Fallout, Radiation, Antarctica--Teniente Rodolfo Marsh Station.
Gamma dose levels have been investigated since November 1982 in four Chilean antarctic stations. These measurements are made at 1.5 m above ground by various types of thermoluminescent detectors. One-year results are reported and discussed. A minimum dose rate of 3.5 mrem/yr R.H.at Teniente Marsh Station and a maximum of 10.2 mrem/yr R.H.at Yelcho Station (Doumer Island) were found. This may be due to the radioactivity of granitic rocks (granodiorite) found on Doumer I. The maximum annual dose found at Yelcho Station is 89 mRad/yr (0.89 mGy/yr), which corresponds to 18% of the annual dose limit for man. (Auth.)

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39-3314
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39-3316
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39-3319
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39-3327
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39-3330
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39-3333
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39-3335
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39-3337
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Offshore structures, Artificial islands, Ice conditions, Offshore drilling, Floating structures, Subsea permafrost, Design, Foundation, Icebergs, Platforms.

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39-3339
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***Marine transportation*, Icebreakers, Design, Forecasting.**

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***Steel structures*, Ice conditions, Artificial islands, Offshore structures, Strength, Design, Forecasting.**

39-3343
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Forest soils, Taiga, Plant ecology, Plant physiology, Acclimatization, Cryogenic soils.

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Taiga, Tundra, Introduced plants, Plant ecology, Ecosystems, Subarctic landscapes, Economic development, Environmental impact, USSR—Yamal Peninsula.

39-3345
Present state of snow cover and its possible changes during the formation of KATEK (Kan-Achinsk Fuel-Energy Complex). [Sovremennoe sostoianie snezhnogo pokrova i ego vozmozhnye izmeneniia pri formirovanii KATEKa],
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Mining, Coal, Electric power, Wastes, Environmental impact, Snow composition, Albedo, Landscape types, Snow water equivalent, Ecology, Water pollution, Soil pollution.

39-3346
Estimating annual losses of winter runoff for river naled and river ice formation in the northeastern USSR. [Otsenka ezhegodnykh poter' zimnego stoka na obrazovanie rechnykh naledeĭ i rechnogo l'da (na primere rek Severo-Vostoka SSSR)],
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Chernaia, F.F.
Ice formation, River ice, Naleds, Alimentation, Runoff, Ice accretion, Ice cover thickness.

39-3347
Determining mean thickness of ground-water naleds from the ice thickness measurements in erosional channels. [Opredelenie sredneĭ moshchnosti naledeĭ podzemnykh vod po izmereniiam tolshchiny l'da v *erozionnykh ruslakh*],
Markov, M.L., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1984, Vol.300, p.61-69, In Russian. 10 refs.
Runoff, Permafrost hydrology, Spaceborne photography, Naleds, Stereophotography, Ground water, Ice cover thickness.

39-3348
My polar travels. [Moi poliarnye puteshestviia],
Treshnikov, A.F., Moscow, Mysl', 1985, 478p., In Russian.
Expeditions, Glacier ice, Drift stations, Sea ice distribution, Ice navigation, Arctic Ocean, Antarctica.
This book is based on the diaries of the author, who explored the polar regions, the Arctic and Antarctica, over a period of 40 years, giving a brief history of Soviet expeditions and describing activities on Soviet polar stations and the author's personal impressions and experiences. Numerous photographs of participating men and ships, and of local scenery, are included.

39-3349
Visibility climatology of McMurdo Sound/Williams Field, Antarctica.
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Snow, Visibility, Ice runways, Ice crystals, Weather forecasting, Weather observations, Meteorological charts, Antarctica—McMurdo Sound.
Accurate forecasting of visibility at McMurdo/Williams Field is essential for the air operations involving the resupply of United States bases and the conduct of research on the Antarctic continent. The Williams Field skiway and the adjacent ice runway are approximately 4.5 mi southeast of McMurdo. Weather observations are taken at both McMurdo and the operational airfield. The visibility climatology, August through March, for McMurdo (1956-1983) and Williams Field skiway/ runway (1968-1983) was prepared using four operational visibility categories, as well as the seven important weather parameters which reduce visibility, namely, blowing snow, light snow, moderate to heavy snow, the three types of fog and ice crystals. A wind speed/direction climatology was also prepared because of its relation to both blowing snow and fog. (Auth.)

39-3350
Ice sighting in Antarctica. [Avistamientos de témpanos en la Antártica],
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Sea ice distribution, Ice surveys.
Ice sighting data are given from observations made at Capitan Arturo Prat Station on board A.P. *Piloto Pardo*, the R/V *Capitan Alcazar* and from the total records. The observation area corresponds to the South Shetland Is., to the Bransfield, the Gerlache, and Bismarck Straits, and to Adelaide I. The recorded data corresponds to daily observations indicating averages, minimum and maximum size in ranges of 10-50, 50-200 and 200-500. A map is shown with the total record contributed by various countries to the Iceberg Observing Program sponsored by the Norwegian Polar Research Institute. (Auth.)

39-3351
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Ice physics, Periglacial processes, Permafrost beneath lakes, Permafrost thermal properties, Ice composition, Extraterrestrial ice, Subsea permafrost, Chemical properties, Permafrost structure, Unfrozen water content, Supercooling, Geochemistry, Hydrothermal processes, Surveys.

39-3352
Cryo-geochemical fields of mineral deposits. [Kriogeokhimicheskie polia mestorozhdeniĭ poleznykh iskopaemykh],
Makarov, V.N., et al, Migratsiia khimicheskikh elementov v kriolitozone (Migration of chemical elements in the cryolithozone) edited by V.N. Makarov, Novosibirsk, Nauka, 1985, p.4-13, In Russian. 16 refs.
Vinokurov, I.P.
Mining, Permafrost, Geochemistry, Surveys, Frozen fines.

39-3353
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Tolstikhin, N.I., Migratsiia khimicheskikh elementov v kriolitozone (Migration of chemical elements in the cryolithozone) edited by V.N. Makarov, Novosibirsk, Nauka, 1985, p.13-21, In Russian. 29 refs.
Earth crust, Subsea permafrost, Extraterrestrial ice, Planetary environments, Permafrost beneath lakes, Permafrost distribution, Unfrozen water content, Permafrost hydrology, Ground water, Water chemistry, Ice composition, Minerals, Supercooling.

39-3354
Influence of cryogenesis on the formation of secondary geochemical fields of ore deposits. [Vliianie kriogeneza na formirovanie vtorichnykh geokhimicheskikh polei mestorozhdeniĭ poleznykh iskopaemykh],
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Geochemistry, Permafrost weathering, Frozen rock temperature, Permafrost thermal properties, Surveys, Hydrothermal processes, Mineralogy, Mining.

39-3355
Cryogenic migration of chemical elements in the upper Yana River area. [K probleme kriogennoĭ migratsii elementov (na primere Verkhoian'ia)],
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Continuous permafrost, Frozen ground chemistry, Permafrost weathering, River basins, Hydrothermal processes, Sublimation, Soil water migration.

39-3356
Mobility of chemical elements in periglacial lithogenesis. [Podvizhnost' khimicheskikh elementov v perigliatsial'nom litogeneze],
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Permafrost thermal properties, Active layer, Permafrost hydrology, Taliks, Lithology, Hydrothermal processes, Frozen ground chemistry.

39-3357
Migration of gold in the high-mountain, bald-peak landscapes of the cryolithozone. [Osobennosti migratsii zolota v vysokogornykh gol'tsovykh landshaftakh kriolitozony],
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Pliusnin, A.M.
Gold, Continuous permafrost, Permafrost weathering, Permafrost hydrology, Mining, Taliks, Exploration, Alpine landscapes, Slope processes, Rock streams, Solifluction.

39-3358
Chemical composition of bottom deposits in coastal areas of the Kara Sea. [Khimicheskiĭ sostav donnykh otlozheniĭ na pribrezhnom uchastke Karskogo morja],
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Grigor'ev, N.F.
Subsea permafrost, Ocean environments, Bottom sediment, Chemical composition, Permafrost distribution.

39-3359
Hydrogeochemistry of the Tunguska Basin cryolithozone in relation to predictions of oil-gas presence. [Gidrogeokhimiia kriolitozony Tungusskogo basseĭna v sviazi s prognozom neftegazonosnosti],
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River basins, Hydrocarbons, Continuous permafrost, Permafrost hydrology, Water chemistry, Hydrothermal processes.

39-3360
Influence of organic matter on the water supercooling temperature in rocks. [Vliianie organicheskikh veshchestv na temperaturu pereokhlazhdeniia vody v gornykh porodakh],
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Fedoseev, N.F.
Supercooling, Permafrost thermal properties, Unfrozen water content, Frozen rock temperature, Artificial freezing, Ice formation, Ground water, Frozen rock strength.

39-3361
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Soil water migration, Frozen rock temperature, Hygroscopic water, Unfrozen water content, Ice solid interface, Porosity, Phase transformation.

39-3362
Chemical weathering of pyrite with water and different water solutions at above- and sub-zero temperatures. [*Khimicheskoe* vyvetrivanie pirita s vodoĭ i razlichnymi vodnymi rastvorami pri polozhitel'nykh i otritsatel'nykh temperaturakh],
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Bazarova, V.B.
Active layer, Permafrost weathering, Frozen rock temperature, Ground water, Freeze thaw cycles, Chemical composition, Solutions.

39-3363
Interaction of bromobenzoic acid and potassium butyl xanthate with the surface of disperse ice (snow) from water solutions. [Vzaimodeĭstvie orto-brombenzoĭnoĭ kisloty i butilksantogenata kaliia s poverkhnost'iu dispersnogo l'da (snega) iz vodnykh rastvorov],
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Ice crystals, Soil freezing, Snow crystals, Frost penetration, Ice chemistry, Solutions.

39-3364
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Mosley-Thompson, E., Arnao, B.M.
Glacier mass balance, Mountain glaciers, Snow accumulation, Stratigraphy, Meteorological factors.

39-3365
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Paige, D.A., et al, *Science*, June 7, 1985, 228(4704), p.1160-1168, 35 refs.
Ingersoll, A.P.
Mars (planet), Frost, Heat balance, Carbon dioxide, Infrared photography, Radiation balance, Seasonal variations, Cosmic dust.

39-3366
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Cellier, P., *Agronomie*, 1984, 4(8), p.741-747, In French with English summary. 17 refs.
Frost, Soil temperature, Air temperature, Surface temperature, Wind velocity, Dew point, Forecasting, Analysis (mathematics).

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Arctic vessel design.
German, J.G., *Marine engineering/log*, Oct. 1984, 89(11), p.25-36.
Ships, Icebreakers, Ice navigation, Tanker ships, Design, Cold weather operation.

39-3368
Hoverbarge in the Arctic.
Ramsden, H.D., *Marine engineering/log*, Oct. 1984, 89(11), p.83-85.
Ships, Ice navigation, Marine transportation, Cold weather operation.

39-3369
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Wan, T., Gao, Y.
Glacier thickness, Radar echoes, Glacier surveys, China—Qilian Shan.

39-3370
Quartz sand grain shape and other criteria used to distinguish glacial and non-glacial events in a marine core from Frobisher Bay, Baffin Island, N.W.T., Canada.
Dowdeswell, J.A., et al, *Sedimentology*, Feb. 1985, 32(1), p.119-132, Refs. p.130-132.
Osterman, L.E., Andrews, J.T.
Marine deposits, Glaciation, Paleoclimatology, Sands, Drill core analysis, Scanning electron microscopy, Bottom sediment.

39-3371
***Concentration* and deposition of acidity, major ions and trace metals in the snowpack of the eastern Canadian shield during the winter of 1980-1981.**
Barrie, L.A., et al, *Atmospheric environment*, 1984, 18(7), p.1459-1469, 19 refs.
Vet, R.J.
Snow impurities, Snow composition, Air pollution, Chemical analysis, Hydrogen ion concentration, Environmental impact, Ions, Winter, Canada.

39-3372
Microorganism survival in an ice-covered river.
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Smith, D.W., Gerard, R.
Cryobiology, Microbiology, Ice cover effect, Water pollution, Sewage disposal, Bacteria, Water treatment.

39-3373
Vegetation pattern and ecology of siliceous boulder snow beds on Svalbard.
Elvebakk, A., *Polarforschung*, 1984, 54(1), p.9-20, In English with German summary and captions. 16 refs.
Mosses, Lichens, Vegetation patterns, Snow cover, Norway—Svalbard.

39-3374
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Heim, D., *Polarforschung*, 1984, 54(1), p.21-36, In German with English summary and captions. 19 refs.
Glacier flow, Moraines, Iceland.

39-3375
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Thomsen, H.H., *Polarforschung*, 1984, 54(1), p.37-41, In English with German summary and captions. 9 refs.
Ice sheets, Mass balance, Greenland—Jakobshavn.

39-3376
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Ice drills, Thermal drills, Temperature measurement.

39-3377
Heat and mass transfer in contact melting (applied to thermal drilling). [*Teplomassoperenos* pri kontaktnom plavlenii (primenitel'no k usloviiam teplovogo *bureniia*)],
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Ice melting, Thermal drills, Glacier ice, Ice drills, Frozen rock temperature, Snow stratigraphy, Firn, Analysis (mathematics), Computer applications, Mathematical models.

39-3378
Geomagnetic measurements made on the moving ice shelf at Halley, Antarctica.
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Rouse, J.R.
Ice shelves, Geomagnetism, Measuring instruments, Antarctica—Halley Station.
The difficulties involved in making geomagnetic measurements from the moving ice shelf at Halley are considered, as are measurements giving information on this movement. These indicate that the observatory has been moving westward, accelerating from 400 m/yr in 1969 to 800 m/yr in 1980, and rotating at up to 30 min of arc/yr. The effects of both rotation and tilt on the two types of variometers installed are examined. It is concluded that the geomagnetic data obtained from Halley since 1969 are best treated as variation data. (Auth.)

39-3379
Similarity solutions of the Cauchy problem of horizontal flow of water through porous media for experimental determination of diffusivity.
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Porous materials, Water flow, Diffusion, Water content, Mathematical models, Experimentation.
An experimental method for determining diffusivity is studied by using similarity solutions of the Cauchy problem of horizontal flow of water through homogeneous porous media. The theoretical justification of the method is presented by applying a mathematical theorem recently derived by Van Duyn. Some important aspects of data analysis are discussed by using actual experimental data.

39-3380
Thermopile construction in the North. [Termosvai v stroitel'stve na Severe],
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Foundations, Permafrost bases, Permafrost control, Thermopiles, Artificial freezing, Bearing strength.

39-3381
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Alpine tundra, Taiga, Steppes, Vegetation patterns, Plant ecology, Ecosystems, Landscape types, Cryogenic soils, Surveys, Mapping, Charts.

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Ships, Icebreakers, Ice breaking, Ice navigation, Propagation, Velocity measurement, Metal ice friction, Ice friction, Design, Arctic Ocean.

39-3383
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Pozniak, I.I., Svistunov, B.N.
Icebreakers, Ice navigation, Models, Tests.

39-3384
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Ice pressure, Ice navigation, Ships, Ship icing, Ice loads, Sea ice distribution, Fast ice, Ice floes.

39-3385
Problem of determining ship speed, allowing for the incompleteness and inaccuracy of initial information on ice cover. [Uchet nepolnoty i netochnosti iskhodnoĭ informatsii o ledianom pokrove v zadache opredeleniia skorosteĭ dvizheniia sudov],
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Ice navigation, Ice reporting, Sea ice distribution, Ships, Ice conditions.

39-3386
Influence of steel surface roughness on the dynamic *friction coefficient* for ice. [Vliianie sherokhovatosti stal'noĭ poverkhnosti na koeffitsient dinamicheskogo treniia po l'du],
Ierusalimskiĭ, A.V., et al, *Arkhitekturno-konstruktivnyĭ tip, morekhodnye i ledovye kachestva perspektivnykh sudov* (Architectural and structural type, nautical and ice-navigation qualities of promising ships) edited by IU.I. Panin, Leningrad, Transport, 1984, p.90-96, In Russian. 9 refs.
Svistunov, B.N.
Ships, Ice navigation, Metal ice friction, Propagation, Velocity, Roughness coefficient.

39-3387
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Ice mechanics, River ice, Lake ice, Ice growth, Ice crystal structure, Ice physics, Snow ice, Temperature effects, Meteorological factors, Grain size, Ice creep, Experimentation.

39-3388
Airborne radio echo sounding of sub-polar glaciers in Spitsbergen.
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Drewry, D.J., Liestöl, O., Orheim, O.
Glacier surveys, Radio echo soundings, Glacier thickness, Airborne radar, Firn, Boreholes, Profiles, Norway—Spitsbergen.

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Denner, H.-D., Walter, H.
Core samplers, Soil freezing, Lacustrine deposits, Sediments, Lake water, Microstructure, Interfaces.

39-3390
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Hunter, R.E., Phillips, R.L.
Marine geology, Ocean bottom, Sediments, Hydrography, Equipment, Charts, Chukchi Sea.

39-3391
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Snider, C.R., Lawrence, R.
Ice conditions, Lake ice, Weather observations, Ice cover, Winter, Great Lakes.

39-3392
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Fukusako, S., Matsuo, K., Uemura, S.
Ice formation, Frost, Ice vapor interface, Phase transformations, Supercooling, Heat transfer, Mass transfer, Temperature effects, Convection, Plates.

39-3393
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Placer mining, Permafrost beneath structures, Permafrost hydrology, Swamps, Active layer, Excavation, Boreholes, Blasting, Baykal Amur railroad, Explosives, Frozen fines, Clay soils.

39-3394
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Blasting, Permafrost physics, Frozen fines, Acoustics, Explosion effects, Elastic properties, Permafrost thickness, Frozen rock temperature, Ground ice.

39-3395
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Aleshin, L.P.
Blasting, Explosion effects, Explosives, Seismic velocity, Seismic surveys, Seasonal freeze thaw, Frost penetration.

39-3396
Influence of masses and forms of charges and of mechanical properties of frozen ground on the length of detonation impulse and the volume of crushing. [Vliianie massy i formy zariada a takzhe mekhanicheskikh svoĭstv razrushaemogo merzlogo grunta na prodolzhitel'nost' vzryvnogo impul'sa i ob"em drobleniia],
Silin, V.S., et al, *Vzryvnoe delo,* 1984, No.86/43, p.130-136, In Russian. 4 refs.
Alferov, B.M., Malen'kikh, IU.A.
Blasting, Frozen fines, Detonation waves, Unfrozen water content, Seasonal freeze thaw, Frost penetration.

39-3397
Basic trends in using explosives in mining frozen placers. [Osnovnye napravleniia ispol'zovaniia VV pri razrabotke merzlykh rossypeĭ],
Egupov, A.A., *Vzryvnoe delo,* 1984, No.86/43, p.136-140, In Russian. 3 refs.
Placer mining, Shaft sinking, Permafrost, Blasting, Explosives.

39-3398
Comparative evaluation of the effect of propelling charges in seasonally frozen and thawed ground. [Sravnitel'naia otsenka deĭstviia zariadov vybrosa v sezonnomerzlykh i talykh gruntakh],
Frash, G.B., et al, *Vzryvnoe delo,* 1984, No.86/43, p.140-143, In Russian. 4 refs.
Poplavskiĭ, V.A., Postnov, V.V., Dzhumaev, V.M.
Blasting, Explosives, Explosion effects, Frozen rock temperature, Seasonal freeze thaw, Frost penetration.

39-3399
Conducting blasting work in seasonally frozen ground in West Siberia. [Osobennosti vedeniia vzryvnykh rabot v sezonnomerzlykh gruntakh v usloviiakh Zapadnoĭ Sibiri],
Frash, G.B., *Vzryvnoe delo,* 1984, No.86/43, p.144-148, In Russian. 4 refs.
Swamps, Blasting, Active layer, Seasonal freeze thaw, Frost penetration, Snow cover effect, Clay soils, USSR—Tyumen'.

39-3400
Borehole blasting during frozen ground excavation on BAM construction sites. [Burovzryvnye raboty pri rykhlenii merzlykh gruntov na stroitel'stve BAMa],
Basistov, M.A., et al, *Vzryvnoe delo,* 1984, No.86/43, p.149-157, In Russian.
Semin, A.P., Fazylov, R.G., Bukin, S.N.
Blasting, Sporadic permafrost, Permafrost hydrology, Taliks, Frozen fines, Baykal Amur railroad, Alluvium, Explosives, Clay soils, Boreholes.

39-3401
Efficiency of pit-charge blasting and excavation techniques on BAM construction sites. [Effektivnost' primeneniia kotlovykh zariadov rykhleniia i vybrosa na stroitel'stve BAMa],
Budanov, A.S., et al, *Vzryvnoe delo,* 1984, No.86/43, p.157-162, In Russian. 3 refs.
Denisov, V.I., Lunev, A.I.
Active layer, Excavation, Blasting, Baykal Amur railroad, Permafrost beneath structures.

39-3402
Justification of the technology of hydraulic filling of earth blocks under severe climatic conditions. [Obosnovanie tekhnologii blochnogo namyva zemlianykh sooruzheniĭ vozvodimykh v surovykh klimaticheskikh usloviiakh],
Popov, IU.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1985, No.2, p.96-100, In Russian. 8 refs.
Dziubenko, L.F.
Earth dams, Hydraulic fill, Permafrost beneath structures, Rock fills, Seasonal freeze thaw.

39-3403
Construction of overhead lines on surface foundations under conditions of the northern Tyumen' region. [Stroitel'stvo VL na poverkhnostnykh fundamentakh v usloviiakh severa Tiumenskoĭ oblasti],
Pylaev, E.L., et al, *Energeticheskoe stroitel'stvo,* Apr. 1985, No.4, p.64-65, In Russian.
Bystrykh, V.F., Lipkind, A.M., Strel'nikov, E.A.
Power lines, Swamps, Power line supports, Foundations, Permafrost beneath structures, Discontinuous permafrost.

39-3404
***Shelf* to work in the Arctic.** ["Shel'fu" rabotat' v Arktike],
Savchenko, A., *Morskoĭ flot,* 1985, No.4, p.31, In Russian.
Floating structures, Continental shelves, Arctic Ocean.

39-3405
Mathematical description and calculation of contact melting.
Salamatin, A.N., et al, *Journal of engineering physics,* Sep. 1984 (Pub. Mar. 85), 47(3), p.1071-1077, Translated from Inzhenerno-fizicheskiĭ zhurnal. 12 refs.
Fomin, S.A., Chistiakov, V.K., Chugunov, V.A.
Glacier ice, Thermal drills, Ice melting.

39-3406
Proceedings.
Symposium on Relating Theory to Practice in Artificial Ground Freezing, [Nottingham, England], Sep. 25, 1984, University of Nottingham, Department of Civil Engineering, [1984], 54p., Refs. passim. For individual papers see 39-3407 through 39-3414.
Jones, R.H., ed.
Soil freezing, Artificial freezing, Frost heave, Soil strength, Meetings, Engineering, Ice lenses, Excavation, Soil water, Models.

39-3407
Some applications of artificial ground freezing to foundation engineering.
Harris, J.S., Symposium on Relating Theory to Practice in Artificial Ground Freezing, Nottingham, England, Sep. 25, 1984. Proceedings. Edited by R. H. Jones, University of Nottingham, Department of Civil Engineering, 1984, p.1-6, 7 refs.
Soil freezing, Artificial freezing, Shaft sinking, Excavation, Foundations, Engineering.

39-3408
Control of ground and groundwater for shaft sinking.
Ferguson, G.A., et al, Symposium on Relating Theory to Practice in Artificial Ground Freezing, Nottingham, England, Sep. 25, 1984. Proceedings. Edited by R. H. Jones, University of Nottingham, Department of Civil Engineering, 1984, p.7-12, 17 refs.
Crystal, L.
Soil freezing, Shaft sinking, Artificial freezing, Ground water, Soil creep, Design.

39-3409
Model of frost heave and ice lensing including overburden pressure.
Frost, S.R., Symposium on Relating Theory to Practice in Artificial Ground Freezing, Nottingham, England, Sep. 25, 1984. Proceedings. Edited by R.H. Jones, University of Nottingham, Department of Civil Engineering, 1984, p.13-18, 5 refs.
Frost heave, Ice lenses, Soil pressure, Ground ice, Hydraulics, Models, Soil water, Grain size, Temperature effects.

39-3410
Some results from a mathematical model predicting ice lensing and frost heave.
Piper, D., et al, Symposium on Relating Theory to Practice in Artificial Ground Freezing, Nottingham, England, Sep. 25, 1984. Proceedings. Edited by R. H. Jones, University of Nottingham, Department of Civil Engineering, 1984, p.19-28, 11 refs.
Holden, J.T.
Ice lenses, Frost heave, Ice growth, Artificial freezing, Soil freezing, Forecasting, Mathematical models, Frost penetration.

39-3411
Ice wall design in shaft sinking.
Jeffrey, R.I., Symposium on Relating Theory to Practice in Artificial Ground Freezing, Nottingham, England, Sep. 25, 1984. Proceedings. Edited by R. H. Jones, University of Nottingham, Department of Civil Engineering, 1984, p.29-24, 2 refs.
Shaft sinking, Soil freezing, Artificial freezing, Soil strength, Walls, Design criteria, Stresses.

39-3412
Freeze wall strength and stability—whose theory do you believe.
Auld, F.A., Symposium on Relating Theory to Practice in Artificial Ground Freezing, Nottingham, England, Sep. 25, 1984. Proceedings. Edited by R. H. Jones, University of Nottingham, Department of Civil Engineering, 1984, p.35-42, 12 refs.
Shaft sinking, Artificial freezing, Soil freezing, Soil strength, Soil stabilization, Walls, Design, Excavation, Linings.

39-3413
Experience with a chilled gas pipeline.
Kettle, R.J., Symposium on Relating Theory to Practice in Artificial Ground Freezing, Nottingham, England, Sep. 25, 1984. Proceedings. Edited by R. H. Jones, University of Nottingham, Department of Civil Engineering, 1984, p.43-48, 12 refs.
Soil freezing, Gas pipelines, Frost heave, Artificial freezing, Models, Experimentation, Frost action, Soil water migration, Soil temperature, Temperature effects.

39-3414
Role of field observations in bridging the gap between theory and practice.
Jones, R.H., Symposium on Relating Theory to Practice in Artificial Ground Freezing, Nottingham, England, Sep. 25, 1984. Proceedings. Edited by R. H. Jones, University of Nottingham, Department of Civil Engineering, 1984, p.49-54, 11 refs.
Soil freezing, Artificial freezing, Shaft sinking, Tunneling (excavation), Soil stabilization, Excavation, Liquefied gases, Soil strength.

39-3415
Science program for an imaging radar receiving station in Alaska.
Weller, G., et al, MP 1884, Pasadena, CA, U.S. National Aeronautics and Space Administration, Dec. 1, 1983, 45p., 19 refs.
Carsey, F., Holt, B., Rothrock, D.A., Weeks, W.F.
Remote sensing, Ice conditions, Stations, Research projects, Sea ice distribution, Oceanography, Marine geology, Glaciology, Vegetation, United States—Alaska, Arctic Ocean.
There would be broad scientific benefit in establishing in Alaska an imaging radar receiving station that would collect data from the European Space Agency's Remote Sensing Satellite, ERS-1; this station would acquire imagery of the ice cover from the American territorial waters of the Beaufort, Chukchi, and Bering Seas; this station, in conjunction with similar stations proposed for Kiruna, Sweden, and Prince Albert, Canada, would provide synoptic coverage of nearly the entire Arctic. The value of such coverage to aspects of oceanography, geology, glaciology, and botany is considered.

39-3416
Beaufort highlights. *Offshore engineer,* Apr. 1985, p.100-122.
Offshore structures, Offshore drilling, Ice loads, Artificial islands, Marine transportation, Dredging, Ice pressure, Platforms, Beaufort Sea.

39-3417
Estimation of selected flow and water-quality characteristics of Alaskan streams.
Parks, B., et al, *U.S. Geological Survey. Water-Resources Investigations report,* 1985, 84-4246, 64p., Refs. p.60-64.
Madison, R.J.
Water reserves, Stream flow, Meltwater, Glacial lakes, Ice dams, Floods, Lake water, Statistical analysis, United States—Alaska.

39-3418
Road construction in palsa fields.
Keyser, J.H., et al, *Transportation research record,* 1984, No.978, p.26-36, 16 refs.
Laforte, M.A.
Permafrost beneath roads, Frost mounds, Discontinuous permafrost, Design, Road maintenance, Topographic features, Embankments, Ground ice, Thermal regime.

39-3419
Construction and performance of pavement over muskegs.
Keyser, J.H., et al, *Transportation research record,* 1984, No.978, *p.68-80,* 12 *refs.*
Laforte, M.A.
Pavements, Embankments, Permafrost beneath roads, Muskeg, Discontinuous permafrost, Design, Surface properties, Cracking (fracturing), Settlement (structural).

39-3420
Proceedings.
Climate Diagnostics Workshop, 6th, Palisades, NY, Oct. 14-16, 1981, Washington, D.C., U.S. Dept. of Commerce, Mar. 1982, 341p., Refs. passim. For selected papers see 38-3139 and 39-3421 through 39-3423.
Snow cover distribution, Ice surveys, Meteorological data, Climatic changes, Meteorological charts, Forecasting, Seasonal variations.

39-3421
Winter snow cover drought of 1980-81.
Matson, M., et al, Climate Diagnostics Workshop, 6th, Palisades, NY, Oct. 14-16, 1981. Proceedings, Washington, D.C., U.S. Dept. of Commerce, Mar. 1982, p.57-63.
Varnadore, M.S.
Snow cover distribution, Remote sensing, Maps, Statistical analysis, Winter.

39-3422
Variations in Northern Hemisphere snow cover utilizing digitized weekly charts derived from satellite imagery, 1967-1980.
Dewey, K.F., et al, Climate Diagnostics Workshop, 6th, Palisades, NY, Oct. 14-16, 1981. Proceedings, Washington, D.C., U.S. Dept. of Commerce, Mar. 1982, p.157-165, 8 refs.
Heim, R., Jr.
Snow cover distribution, Remote sensing, Synoptic meteorology, Meteorological charts.

39-3423
On the use of snow cover as a short-term climatic predictor.
Walsh, J.E., et al, Climate Diagnostics Workshop, 6th, Palisades, NY, Oct. 14-16, 1981. Proceedings, Washington, D.C., U.S. Dept. of Commerce, Mar. 1982, p.170-177.
Tucek, D.R.
Snow cover distribution, Climatology, Forecasting, Surface temperature, Meteorological charts, Seasonal variations.

39-3424
Marine biological data of BIOMASS programme at Syowa Station in the 1982 winter (JARE-23).
Fukuchi, M., et al, *Japanese Antarctic Research Expedition. JARE data reports,* Feb. 1985, No.98, 113p., Refs. p.13 and 63.
Tanimura, A., Ohtsuka, H., Hoshiai, T.
Ice volume, Antarctica—Showa Station.
A three-year program of shore-based oceanographic and marine biology research is reported. The locations of 5 oceanographic stations, selected according to accessibility and depth of water, are shown. Methods of water sampling and plankton sampling carried out at those stations are described and the results are tabulated.

39-3425
Antarctic marine environments and offshore oil.
Keys, J.R., Wellington, New Zealand, Commission for the Environment, 1984, 168p., Refs. p.131-168.
Environmental protection, Oil spills, Sea ice distribution, Ice navigation, Icebergs, Water pollution, Antarctica—McMurdo Sound, Antarctica—Ross Sea.
A literature review is presented which identifies hazards to the antarctic marine environment, the species and habitats which would be sensitive to any offshore activity, especially in the Ross Sea, and the hazards to offshore activities in the Ross Sea, including dynamic and first-year pack ice, icebergs, the variability and short duration of the open water season, deep water, strong currents, low temperatures, frequent low visibility, and storms with strong winds. Scientific concerns and environmental research needs are examined, as is the Canadian experience with offshore hydrocarbon activity in high latitudes. Characteristics of icebergs and sea-born ice, as well as some oceanographic and meteorological characteristics in offshore areas are shown in 3 appendixes.

39-3426
Improving the organization, development and technology of modular construction on oil and gas fields. [Sovershenstvovanie organizatsii obustroĭstva gazonefteprornyslov v blochno-komplektnom ispolneniĭ],
Berezin, V.L., et al, *Neftianaia promyshlennost'. Seriia Neftepromyslovoe stroitel'stvo,* 1985, 1(46), 51p., In Russian with English table of contents enclosed. 70 refs.
Kurepin, B.N., Telegin, L.G.
Modular construction, Earthwork, Industrial buildings, Pipelines, Houses, Transportation, Petroleum industry, Permafrost distribution, Paludification, Taiga, Construction cost.

39-3427
New data on the stable oxygen isotope content of syngenetic, Late Pleistocene ice wedges in the lower course of the Kolyma River. [Novye dannye po soderzhaniiu stabil'nykh izotopov kisloroda v singeneticheskikh povtorno-zhil'nykh l'dakh pozdnepleĭstotsenovogo vozrasta nizoviĭ r. Kolymy],
Vasil'chuk, IU.K., et al, *Akademiia nauk SSSR. Doklady,* 1985, 281(4), p.904-906, In Russian. 13 refs.
Permafrost structure, Ice dating, Permafrost dating, Ice wedges, Isotope analysis, Oxygen isotopes.

39-3428
Frost resistance of Norway spruce seedlings.
Salai, J., et al, *Soviet plant physiology,* Jan.-Feb. 1984 (Publ. Aug. 84), 31(1, pt.2), p.144-148, Translated from Fiziologiia rasteniĭ. 18 refs.
Nezgovorov, A., Terkulova, L.P., Krasavtsev, O.A.
Trees (plants), Plant physiology, Frost resistance, Taiga, Plant ecology, Forestry.

39-3429
Thermal interaction between a pipeline and the surrounding frozen ground.
Brekhman, I.IA., et al, *Journal of engineering physics,* Feb. 1984 (Publ. Aug.84), 46(2), p.149-155, Translated from Inzhenerno-fizicheskiĭ zhurnal. 13 refs.
Krasovitskiĭ, V.A.
Frozen fines, Pipelines, Pipes (tubes), Heat transfer, Analysis (mathematics).

39-3430
Thermohaline circulation in the Arctic mediterranean seas.
Aagard, K., et al, *Journal of geophysical research,* May 20, 1985, 90(C3), p.4833-4846, 39 refs.
Swift, J.H., Carmack, E.C.
Water chemistry, Water temperature, Ocean currents, Arctic Ocean, Greenland Sea, Norwegian Sea.

39-3431
Numerical simulation of Northern Hemisphere sea ice variability, 1951-1980.
Walsh, J.E., et al, *Journal of geophysical research,* May 20, 1985, 90(C3), MP 1882, p.4847-4865, 36 refs.
Hibler, W.D., III, Ross, B.
Sea ice, Environment simulation, Seasonal variations, Ice models, Drift, Ice cover thickness.
The model is run with a daily time step and is forced by interannually varying fields of geostrophic wind and termperature-derived thermodynamic fluxes. The results include documentation of the sensitivities to the source of the thermodynamic forcing data and to the number of thickness levels in the thermodynamic formulation. The fields of ice velocity and thickness show strong seasonal as well as interannual variability. The Pacific gyre is found to be well-developed in spring and autumn but less so in winter and summer. The simulated velocities show no bias but considerable scatter relative to the drift of the Arctic buoys in 1979 and 1980. An analysis of the regional mass budgets shows that the normal seasonal cycle is controlled primarily by the thermodynamic processes but that the thickness anomalies in much of the Arctic are attributable primarily to dynamic processes during winter, spring, and autumn. Thermodynamic processes contribute more strongly to summer anomalies near the ice edge. The tendency for ice anomalies to be advected by the pattern of mean drift is apparent in multiseason lag correlations involving subregions of the Arctic Basin and the peripheral seas. (Auth. mod.)

39-3432
East Greenland polar front in autumn.
Paquette, R.G., et al, *Journal of geophysical research,* May 20, 1985, 90(C3), p.4866-4882, 31 refs.
Bourke, R.H., Newton, J.F., Perdue, W.F.
Ocean currents, Water chemistry, Sea ice, Salinity, Water temperature, Velocity.

39-3433
Mesoscale eddies of the Arctic Ocean.
Manley, T.O., et al, *Journal of geophysical research,* May 20, 1985, 90(C3), p.4911-4930, 41 refs.
Hunkins, K.
Ocean currents, Sea ice, Drift, Arctic Ocean.

39-3434
Comment on "Ice-induced vertical circulation in an Arctic fiord" by Edward P.W. Horne.
Neshyba, S., et al, *Journal of geophysical research,* May 20, 1985, 90(C3), p.5011-5013, Includes reply by Horne. 8 refs. For paper being commented on see 39-2362.
Horne, E.P.W.
Sea ice, Glacier ice, Sea water, Thermal regime.

39-3435
Summer Arctic sea ice character from satellite microwave data.
Carsey, F.D., *Journal of geophysical research,* May 20, 1985, 90(C3), p.5015-5034, 66 refs.
Sea ice distribution, Seasonal variations, Remote sensing, Spacecraft, Microwaves, Albedo.

39-3436
Active microwave measurements of Arctic sea ice under summer conditions.
Onstott, R.G., et al, *Journal of geophysical research,* May 20, 1985, 90(C3), p.5035-5044, 21 refs.
Gogineni, S.P.
Sea ice, Seasonal variations, Radar echoes, Airborne radar, Microwaves.

39-3437
Processes and imagery of first-year fast sea ice during the melt season.
Holt, B., et al, *Journal of geophysical research,* May 20, 1985, 90(C3), p.5045-5062, 34 refs.
Digby, S.A.
Sea ice distribution, Seasonal variations, Remote sensing, Spacecraft, Snow melting, Ice melting, Canada—Northwest Territories—Prince Patrick Island.

39-3438
Temporal variations of the microwave signatures of sea ice during late spring and early summer near Mould bay NWT.
Grenfell, T.C., et al, *Journal of geophysical research,* May 20, 1985, 90(C3), p.5063-5074, 14 refs.
Lohanick, A.W.
Sea ice, Microwaves, Seasonal variations, Ice temperature, Canada—Northwest Territories—Mould Bay.

39-3439
Proceedings.
Canadian Symposium on Remote Sensing, 8th, Montreal, May 1983, Sainte-Foy, Quebec, Association québécoise de télédétection, 1984, 840p., With French summaries. Refs. passim. For selected papers see 39-3440 through 39-3445.
Thomson, K.P.B., ed, Bonn, F., ed, Association québécoise de télédétection, Congress, 4th, Montreal, May 1983.
Sea ice distribution, Icebergs, Remote sensing, Airborne radar, Ice conditions, Meetings, Lake ice, Ice detection, Ice floes, Canada.

39-3440
Automated computer monitoring sea-ice temperature by use of NOAA satellite data.
Condal, A.R., et al, Canadian Symposium on Remote Sensing, 8th, Montreal, May 1983. Proceedings. Edited by K.P.B. Thomson and F. Bonn, Sainte-Foy, Quebec, Association québécoise de télédétection, 1984, p.145-150, 4 refs., With French summary.
Le, H.V.
Ice temperature, Sea ice, Remote sensing, Albedo, Computer applications, Spacecraft.

39-3441
Iceberg mapping in Lancaster Sound with synthetic aperture radar.
Lowry, R.T., et al, Canadian Symposium on Remote Sensing, 8th, Montreal, May 1983. Proceedings. Edited by K.P.B. Thomson and F. Bonn, Sainte-Foy, Quebec, Association québécoise de télédétection, 1984, p.239-246, 9 refs., With French summary.
Miller, J.
Icebergs, Sea ice distribution, Remote sensing, Airborne radar, Mapping, Ice detection.

39-3442
Ice floe dimensions as calculated by transect measurements.
Nazarenko, D., et al, Canadian Symposium on Remote Sensing, 8th, Montreal, May 1983. Proceedings. Edited by K.P.B. Thomson and F. Bonn, Sainte-Foy, Quebec, Association québécoise de télédétection, 1984, p.247-252, 1 ref., With French summary.
Miller, J.D.
Ice floes, Sea ice distribution, Remote sensing, Measurement, Pack ice, Analysis (mathematics).

39-3443
Summer distribution of icebergs in northwestern Baffin Bay and Lancaster Sound.
Pearson, D.E., Canadian Symposium on Remote Sensing, 8th, Montreal, May 1983. Proceedings. Edited by K.P.B. Thomson and F. Bonn, Sainte-Foy, Quebec, Association québécoise de télédétection, 1984, p.253-260, 4 refs., With French summary.
Icebergs, Sea ice distribution, Remote sensing, Meteorological factors, Side looking radar, Seasonal variations, Baffin Bay, Canada—Northwest Territories—Lancaster Sound.

39-3444
Analysis of Landsat MSS data for characterizing sediment dispersal in the Beaufort Sea.
Perrott, T., et al, Canadian Symposium on Remote Sensing, 8th, Montreal, May 1983. Proceedings. Edited by K.P.B. Thomson and F. Bonn, Sainte-Foy, Quebec, Association québécoise de télédétection, 1984, p.283-291, 7 refs., With French summary.
Harper, J., Hill, P., Blasco, S.
Suspended sediments, Marine deposits, Ocean bottom, Remote sensing, LANDSAT, Beaufort Sea.

39-3445
Toward a radar surveillance system for Lake Melville/Offshore Labrador.
Parashar, S., et al, Canadian Symposium on Remote Sensing, 8th, Montreal, May 1983. Proceedings. Edited by K.P.B. Thomson and F. Bonn, Sainte-Foy, Quebec, Association québécoise de télédétection, 1984, p.293-300, 13 refs., With French summary.
Perrott, T., Worsfold, R., Ford, I.
Ice surveys, Ice conditions, Airborne radar, Icebergs, Lake ice, Remote sensing, Side looking radar, Ice detection, Ice navigation, Canada—Northwest Territories—Melville Lake.

39-3446
Davis Strait iceberg scouring study.
Pereira, C.P.G., et al, *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-CORE publication,* Dec. 1984, 84-4, 78p., Refs. p.75-78.
Woodworth-Lynas, C.M.T., Barrie, J.V.
Icebergs, Ice scoring, Acoustic measurement, Ocean bottom, Marine deposits, Davis Strait.

39-3447
Predicting rime ice accretion on airfoils.
Bragg, M.B., *AIAA journal,* Mar. 1985, 23(3), p.381-387, 27 refs.
Aircraft icing, Ice accretion, Hoarfrost, Cloud droplets, Supercooling, Ice forecasting, Analysis (mathematics).

39-3448
Proceedings of the Sixth Symposium on Polar Meteorology and Glaciology.
Kusunoki, K., ed, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, 241p., Refs passim. For individual papers see 39-3449 through 39-3463, or E-31845, E-31846, F-31838, F-31841, F-31842, F-31844, F-31847 through F-31849, I-31831 through F-31837, F-31839, F-31840, J-31850 and K-31843.
Ice, Snow.
The Symposium held on 7-9 December 1983, covered atmospheric constituents and aerosols, radiation, sea ice and physical oceanography, atmospheric circulation and climate, ice sheet and snow cover, snow crystals, atmospheric boundary layer and instrumentation. A total of 57 papers were presented. The volume contains 23 full-length papers and 21 abstracts which will be published in appropriate journals; full-length papers are arranged in the order of scientific areas of meteorology, glaciology and physical oceanography. (Auth. mod.)

39-3449
Summer precipitation onto the South Pole plateau.
Inoue, M., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.70-86, 17 refs.
Ohtake, T., Wakahama, G.
Ice crystals, Snow accumulation, Precipitation (meteorology), Antarctica—Amundsen-Scott Station.
A study was made of ice crystal precipitation in austral summer 1978-1979 at the South Pole from analyses of data of meteorological observations, in which low-level micrometeorological elements were measured by conventional apparatus and high-altitude elements were measured by radiosondes. The result shows that ice crystal precipitation can be classified into "clear sky precipitation" and precipitation from clouds. The latter plays a dominant role in net accumulation of snow at and near the South Pole, as moist air masses move inland in advective flow along the surface of Antarctica from the Weddell and Ross Seas and cool down to form stratus-type clouds from which ice crystals fall. The ice crystal precipitation from a clear sky originates in a layer which is supersaturated with ice, located slightly above the ground surface, and too thin to be identified as a stratus cloud. (Auth. mod.)

39-3450
Growth forms and growth mechanisms of single snow crystals growing at a low temperature.
Gonda, T., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.87-95, 12 refs.
Sei, T., Gomi, H.
Ice crystal growth, Snow crystal growth.
Single ice crystals have been grown in air at various constant pressures at -30C and various constant supersaturations, and measurements of normal growth rate and *in situ* observations of the surface micromorphology of ice crystals have been made. As a result, it has been found that the habit an the morphological instability of ice crystals grown at -30C vary markedly not only with supersaturation and crystal size but also with air pressure. On the basis of this study, it is considered that many snow crystals formed in polar regions at a supersaturation below about 2% grow by a screw mechanism, while at a supersaturation about above 10% they grow by a nucleation mechanism. (Auth.)

39-3451
Ice crystals grown from the vapor at temperatures lower than -15 deg C.
Yamashita, A., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.96-103, 6 refs.
Asano, A., Ohno, T., Wada, M.
Ice crystal growth, Cloud seeding, Silver iodide, Laboratory techniques.

39-3452
Mass flux and visibility observed by snow particle counter.
Ishimoto, K., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.104-112, 7 refs.
Takeuchi, M.
Snowdrifts, Blowing snow, Visibility.

39-3453
Observation of snow drift flux at Mizuho Station, East Antarctica, 1982.
Takahashi, S., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.113-121, 15 refs.
Snowfall, Snowdrifts, Antarctica—Mizuho Station.
Continuous observation of snow drift flux was carried out at Mizuho Station in 1982. Snow drift flux at 1 m height was well correlated with wind velocity. The correlation coefficient on a logarithmic plot was between 0.8 and 0.9. The drift flux was proportional to about the 8 power of wind velocity through the year. The power decreased above -20C. The drift flux increased when precipitation was observed. From the variation of drift flux, precipitation intensity can be estimated. (Auth.)

39-3454
Some characteristics of drifting snow at Mizuho Station, East Antarctica, 1982.
Takahashi, S., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.122-131, 13 refs.
Snowdrifts, Visibility, Snowfall, Velocity measurement.
Several measurements on drifting snow were carried out at Mizuho Station in 1982. Visibility was correlated to wind velocity on a logarithmic plot; it was proportional to about the -8 power of wind velocity over a year. This is explained by the reciprocal relation of visibility to drift density and the power relation of drift density to wind velocity. Moreover, visibility changed with the seasonal variation of daylight. The repose angle of drifting snow particles was observed by measuring the inclination of a cone shape deposit formed in subsurface chamber. The repose angle was more than 80 deg in the case of snow falling and less than 80 deg in the case of no precipitation. The angle in the case of no precipitation showed a temperature dependence. The fall velocity of drifting snow particles in still air was observed. The fall velocity was between 0.3 and 0.9 m/s and depended on wind velocity and snow particle shape. This dependence is explained by the change of particle size or drag coefficient. (Auth.)

39-3455
On the scatter of snow accumulation measured at a given place on the Mizuho Plateau.
Satow, K., *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.132-136, 2 refs.
Snow accumulation, Antarctica. Mizuho Plateau.
The scatter of annual snow accumulation in 1981 at a given place was studied within ten meters in horizontal scale at ten stake farms on the Mizuho Plateau. The coefficient of variation S/M, where M is the average of thirty-six values of annual accumulation and S is the standard deviation, was small (less than 1.0) on the ice sheet with a few exceptions. The S/M value did not depend on snow surface roughness. (Auth.)

39-3456
Snow structure and depth hoar formation in Mizuho Plateau, Antarctica.
Nishimura, H., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.137-146, 13 refs.
Maeno, N.
Snow density, Snow temperature, Snow cover structure, Depth hoar, Antarctica—Mizuho Plateau.
The development of depth hoar was investigated for four 30-m snow cores in Mizuho Plateau with measurements of specific area of internal free surfaces and air permeability. Both the specific area and the air permeability increased with increasing porosity for the four cores. But the specific area at a given porosity was smaller for the core in a region having a smaller accumulation rate, the air permeability at a given porosity was larger, and degrees of orientation were extremely large, showing the development of vertical structure. It was concluded that the development of depth hoar was larger at a smaller accumulation rate. The development of depth hoar is essentially determined not only by the temperature gradient in snow but also by the staying period near the surface where the temperature gradient is largest. Thus the accumulation rate is an important factor in determining the characteristic structure of snow in polar regions. A physical quantity, *cumulative thermogradient,* is introduced to describe the degree of depth hoar development at a given site. (Auth.)

39-3457
Atmospheric neutrons on snow field at Mizuho Station, Antarctica.
Kodama, M., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.147-151, 7 refs.
Takahashi, S., Nishio, F.
Radiation, Snow air interface, Albedo, Antarctica—Mizuho Station.
Cosmic-ray-produced atmospheric neutrons with energies of less than MeV were observed on the snow field at Mizuho Station. Five-month recordings of the two BF3 proportional counters, which were installed about 70 cm above and below the snow surface respectively, show that atmospheric neutron fluxes observed at air-snow boundary are between the two expected fluxes at air-soil and air-water boundaries. The attenuation of neutrons in very deep snow cover is intermediate between that in snow cover on soil, that is, a snow-soil interface, and in water, equivalent to a water-water interface. This work suggests an application to estimation of water equivalent depths of a snow cover accumulated on a permanent snow field, or on a glacier, using atmospheric neutrons. (Auth.)

39-3458
Regional difference of attenuation of radio waves within antarctic ice sheet.
Ohmae, H., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.152-159, 4 refs.
Ice cover effect, Ice electrical properties, Ice sheets, Radio echo soundings, Attenuation, Temperature distribution.
Measurements of ice thickness by radio echo sounding, which operated on 60 MHz, are reported. Calculations of the attenuation rate of radio waves were made by reading the rate of decrease of the strength of internal echoes on the photographs of the A-scope display records. Values of the attenuation coefficient (dB/100 m) in the present study vary between about 1.2 and 3, and become smaller with increase of surface elevation of the ice sheet. But the attenuation coefficient in the bare ice field around the Yamato Mountains is remarkably high. The regional difference of the attenuation coefficient is caused mainly by the temperature distribution with depth in the ice sheet. It is suggested that the high value of the effective attenuation coefficient in the bare ice field is due to not only different temperature distribution but also different dielectric properties of the bare ice. (Auth. mod.)

39-3459
Dirt layers and atmospheric transportation of volcanic glass in the bare ice areas near the Yamato Mountains in Queen Maud Land and the Allan Hills in Victoria Land, Antarctica.
Nishio, M., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.160-173, 23 refs.
Glacier flow, Volcanic ash, Antarctica - Queen Maud Land, Antarctica—Victoria Land.
The grain size analysis of volcanic ash fragments shows that the mean grain size in the Allan Hills region is larger than that in the Yamato Mountains region. This fact indicates that the volcanic sources of the dirt layer in the Yamato Mountains region is farther away than that for the Allan Hills. Based upon the equations describing the transport of volcanic ash fragments, the distance of atmospheric transportation can be predicted by the grain size distribution, and, furthermore, the tephra sources are estimated. The age of ice-contained tephra is also discussed. (Auth.)

39-3460
Composition of dirt layers in the bare ice areas near the Yamato Mountains in Queen Maud Land and the Allan Hills in Victoria Land, Antarctica.
Katsushima, T., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.174-187, 27 refs.
Ice sheets, Volcanic ash, Antarctica—Queen Maud Land, Antarctica—Victoria Land.
Dirt layers of tephra were found on the bare ice surface in the Meteorite Ice Field near the Yamato Mountains, and in the bare ice area near the Allan Hills. Their age is estimated to be up to several tens of thousands of years. Their constituent fragments are well-sorted and composed mainly of volcanic glass shards with minor amounts of crystal fragments. Glass shards of tephra from the Yamato Mountains region have a composition of tholeiitic andesite and associated crystal fragments. Such character of island arc tholeiite of the tephra indicates its source to be some volcano in the South Sandwich Islands. The tephra from the Allan Hills region is composed of glass shards with trachybasaltic composition and crystal fragments. Some young volcano of the McMurdo Volcanic Group is suggested to be a possible source of the tephra. (Auth.)

39-3461
Mechanical drill systems for the 25th Japanese Antarctic Research Expedition.
Suzuki, Y., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.188-196, 5 refs.
Shimbori, K.
Drills, Ice coring drills.
Two light-weight mechanical drill systems, one capable of drilling down to 250 m and the other to 60 m, were developed. Also developed was a mechanical drill to back up 800-m thermal drilling at Mizuho Station. The design and specifications of the drills and winches are described. (Auth.)

39-3462
Extraction of sea ice area using AVHRR data of NOAA satellite.
Tanaka, S., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.197-206, 11 refs.
Yamanouchi, T., Kawaguchi, S.
Albedo, Sea ice distribution, Brightness, Ice detection, Microwaves.
This paper presents a new method for extracting sea-ice information from the multi-spectral AVHRR images (visible, near-infrared and infrared images) of a *TIROS-N/NOAA series* satellite. The original image data are calibrated and corrected. The difference in albedo (reflectivity) between visible and near infrared images is obtained. Further, the difference in the brightness temperature between the 3.7 and 11 micron infrared images is computed. The images formed from these two infrared images are displayed on the image display using the false color technique. By applying this method to data observed during the daytime, the sea ice area and cloud area can be easily distinguished. (Auth.)

39-3463
Discrimination of sea ice edge in the Antarctic, from NOAA MSU.
Yamanouchi, T., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.34, p.207-217, 17 refs.
Seo, Y.
Ice edge, Sea ice distribution, Microwaves, Ice detection, Brightness.
Discrimination of the sea ice edge is done using the microwave 50.3 GHz brightness temperature measured by NOAA satellites. Considering the emissivity variation between the open sea and sea ice, the contour of 232K brightness temperature is regarded as the ice edge. The method is very simple but contains several sources of uncertainty owing to the atmospheric effect and low resolution. Limits and possibilities of the method are discussed. Horizontal distributions of sea ice are compared to the AVHRR imagery and good agreement is found. An annual variation of sea ice distribution is presented. (Auth.)

39-3464
Monthly data 1951-80 normals: snowfall data for selected co-op stations. U.S. Dept. of Commerce, National Climatic Data Center, Asheville, NC, [1981], 52 fiches.
Snowfall, Snow accumulation, Seasonal variations, United States.

39-3465
Proceedings, Vols.3 and 4.
IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., August 27-31, 1984, [1984], 594 + 414p., Refs. passim. For individual papers see 39-3466 through 39-3507. Includes discussions. For Vol.1 and 2 see 39-1750 through 39-1820.
Ice loads, Ice navigation, Offshore structures, Ice strength, Ice mechanics, Ice pressure, Ice conditions, Engineering, Ice solid interface, Meetings, Offshore drilling, Ice control.

39-3466
Failure criteria for sea ice and loads resulting from crushing.
Coon, M.D., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.1-16, 13 refs.
Evans, R.J., Gibson, D.H.
Ice loads, Offshore structures, Ice breaking, Shear strain, Sea ice, Shear stress, Ice pressure, Ice mechanics, Ice cover thickness, Strain tests, Anisotropy, Analysis (mathematics).

39-3467
Finite element analysis for ice forces during failure by crushing against structures.
Pulkkinen, E., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.17-26, 5 refs.
Ice pressure, Ice loads, Ice breaking, Offshore structures, Viscoelasticity, Ice mechanics, Strain, Stresses, Velocity.

39-3468
Hydraulic characteristics of frazil flocs—some preliminary experiments.
Park, C., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.27-35, 9 refs.
Gerard, R.
Frazil ice, Hydraulics, Ice mechanics, River ice, Freezeup, Experimentation, Velocity.

39-3469
Basic investigations on mush ice.
Hellmann, J.-H., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.37-55, 2 refs.
Slush, Ice mechanics, Shear stress, Viscous flow, Ice strength, Channels (waterways), Artificial ice, Tests, Velocity, Ice navigation.

39-3470
Effect of air temperature on the duration of lake ice cover.
Laasanen, O., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.57-67, 8 refs.
Lake ice, Freezeup, Ice breakup, Periodic variations, Air temperature, Time factor, Statistical analysis.

39-3471
Controlling river ice to alleviate ice jam flooding.
Deck, D., MP 1885, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.69-76, 4 refs.
Ice control, River ice, Ice jams, Floods, Ice booms, Ice breakup, Ice cover thickness, Models, Countermeasures.
Many communities affected by ice jam flooding have accepted the event as unpreventable. Others have approached their problem as one of open channel flow and implemented standard projects such as channel modifications or dikes to combat their flooding. We feel that the best approach is to control the river ice before it poses a problem, by controlling either freeze-up or break-up. This paper addresses our involvement at two areas where ice jam flooding has caused severe economic hardship and loss of life. An ice boom has been used to control the formation of river ice at Oil City, Pennsylvania, and a permanent ice control structure will be constructed on Cazenovia Creek in West Seneca, New York, to control the river ice during breakup.

39-3472
Feasibility of ice control below high-head hydro projects.
Liapin, V.E., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.77-87, 2 refs.
Razgovorova, E.L., Tregub, G.A., Chatalina, I.N.
Ice control, River ice, Thermal regime, Dams, Water temperature, Reservoirs, Mathematical models.

39-3473
Investigation and development of ice protection equipment for port and ship repair yards with freezing water area.
Ivanov, L.V., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.89-97, 2 refs.
Vinogradov, E.S., Lupa, A.T.
Ice control, Ports, Ship icing, Ice removal, Icebreakers, Ice conditions, Equipment, Countermeasures.

39-3474
Frazil concentration measurement in the laboratory and in the field.
Tsang, G., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.99-111, 2 refs.
Frazil ice, Water flow, Ice conditions, Measuring instruments.

39-3475
Rubble-protected drilling systems developments.
Graham, B.W., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.113-125, 14 refs.
Potter, R.E., Wood, K.N., Comfort, G.
Grounded ice, Offshore drilling, Offshore structures, Ice control, Artificial islands, Ice loads, Ice mechanics, Protection, Beaufort Sea.

39-3476
Response studies of concrete shell panel models to simulated bergy-bit impact.
Arockiasamy, M., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.127-138, 24 refs.
Swamidas, A.S.J., Hamlyn, D., Munaswamy, K.
Concrete structures, Concrete strength, Loads (forces), Ice loads, Impact strength, Shear strength, Experimentation, Models.

39-3477
Model for predicting global ice loads on wide arctic offshore structures during impacts of summer multiyear ice floes.
Blanchet, D., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.139-149, 8 refs.
Metge, M.
Ice loads, Offshore structures, Ice floes, Impact strength, Ice pressure, Seasonal variations, Forecasting, Mathematical models, Ice cover thickness, Ice strength.

39-3478
Measurements and analysis of ice pressure against a structure in level ice and in pressure ridges.
Hoikkanen, J., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.151-160, 2 refs.
Ice pressure, Offshore structures, Pressure ridges, Ice mechanics, Ice loads, Ice cover thickness, Measuring instruments.

39-3479
Ice-structure interaction: A fundamental energy-based approach.
Cormeau, A., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.161-174, 16 refs.
Jordaan, I.J., Nessim, M., Tomin, M.
Ice loads, Offshore structures, Impact strength, Ice mechanics, Ice solid interface, Ice floes, Icebergs, Ice strength, Sea ice.

39-3480
Grounded ice pads as drilling bases in the Beaufort Sea.
Kemp, T.S., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.175-186, 8 refs.
Sea spray, Grounded ice, Ice islands, Foundations, Ice strength, Offshore structures, Offshore drilling, Ice pressure, Compressive properties, Design, Beaufort Sea.

39-3481
Ice interaction with Adams Island, Winter 1982-83.
Frederking, R.M.W., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.187-201, 8 refs.
Ice loads, Offshore landforms, Ice solid interface, Environmental impact, Ice pressure, Ice conditions, Ice mechanics, Strains, Stresses.

39-3482
Model test investigation of ice forces on fixed and floating conical structures.
Wessels, E., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.203-219, 7 refs.
Ice loads, Ice models, Offshore structures, Floating structures, Ice solid interface, Ice cover thickness, Ice pressure, Pressure ridges, Tests, Velocity.

39-3483
Rubble protection—an alternative for arctic exploration.
Potter, R.E., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.221-236, 15 refs.
Bruce, J.C., Allyn, N.F.B.
Sea spray, Grounded ice, Foundations, Offshore structures, Ice mechanics, Ice solid interface, Offshore drilling, Protection.

39-3484
Ice action on hydraulic structure slopes.
Aleĭnikov, S.M., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.237-248, 1 ref.
Liapin, V.E., Shmeleva, L.A., Kheĭsin, D.E.
Ice loads, Hydraulic structures, Slope stability, Ice pileup, Experimentation, Analysis (mathematics), Protection, Construction materials.

39-3485
Recommendations on the design of loads on hydraulic structures due to ice accumulations.
Karnovich, V.N., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.249-253, 2 refs.
Sokolov, I.N.
Ice loads, Hydraulic structures, Ice dams, River ice, Ice conditions, Analysis (mathematics), Design, Ice cover thickness, Ice melting.

39-3486
Segmented icebreaking ship model testing technique development.
Nawwar, A.M., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.255-265, 12 refs.
Howard, D., Bayly, I.M.
Ice models, Ice breaking, Ice strength, Icebreakers, Ice loads, Ice navigation, Ice friction, Ice conditions, Tests.

39-3487
Small scale tests of sea bottom ice scouring.
Abdelnour, R., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.267-279, 7 refs.
Graham, B.
Ice scoring, Ocean bottom, Loads (forces), Pressure, Bottom sediment, Icebergs, Models, Velocity, Tests, Sands.

39-3488
Revised version: Ice-milling load encountered by a controllable pitch propeller.
Sasajima, T., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.281-295, 10 refs.
Mustamäki, E.
Ice navigation, Propellers, Tanker ships, Ice breaking, Ice loads, Ice mechanics, Salt ice, Velocity, Analysis (mathematics).

39-3489
Dynamic ice loads on a ship.
Tunik, A.L., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.297-313, 15 refs.
Ice loads, Ships, Ice solid interface, Impact strength, Ice strength, Ice breaking, Dynamic loads, Analysis (mathematics).

39-3490
Theoretical studies of the redistribution of ice resistance components depending on the icebreaker hull shape and main dimensions.
Ionov, B.P., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.315-323, 3 refs.
Icebreakers, Ice strength, Ice navigation, Analysis (mathematics).

39-3491
New bow for M.V. *Arctic*.
Baker, D.N., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.325-341, 1 ref.
Nishizaki, R.
Icebreakers, Ice breaking, Ice navigation, Design, Tests, Ice cover thickness.

39-3492
Investigation of the effect of the hull plating roughness on the passability of ship in ice.
Erusalimskiĭ, A.V., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.343-352, 5 refs.
Tsoĭ, L.G.
Ice navigation, Ice breaking, Ice conditions, Ice friction, Tanker ships, Ice loads, Analysis (mathematics), Snow cover effect.

39-3493
Instrument for recording ice loads in an offshore structure.
Pukki, J., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.3, [1984], p.353-360.
Simomaa, K.
Ice loads, Offshore structures, Stresses, Measuring instruments.

39-3494
4th report of working group on testing methods in ice.
Earle, E.N., et al, MP 1886, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.1-41, Refs. passim.
Frederking, R., Gavrilo, V.P., Goodman, D.J., Häusler, F.U., Mellor, M., Petrov, I.G., Vaudrey, K.
Ice physics, Ice strength, Air entrainment, Ice friction, Compressive properties, Flexural strength.

39-3495
Contribution to the report of the working group on ice testing.
Ladanyi, B., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.43-53, 25 refs.
Ice creep, Frozen ground mechanics, Ice mechanics, Loads (forces), Soil creep, Ice deformation, Ice relaxation, Boreholes, Tests.

39-3496
Ice properties in relation to ice forces.
Nadreau, J.P., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.63-115, Refs. p.109-115.
Michel, B.
Ice loads, Ice pressure, Ice strength, Ice crystal structure, Ice mechanics, Ice physics, Salt ice, Sea ice, Ice creep, Ice creep, Flexural strength, Brittleness.

39-3497
Ice forces on structures: physical modelling techniques.
Timco, G.W., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.117-150, 84 refs.
Ice pressure, Offshore structures, Ice loads, Icebreakers, Ice physics, Ice models, Ice solid interface, Models, Design, Ice crystal structure, Ice breaking.

39-3498
Theoretical and measured ice forces on wide structures.
Sanderson, T.J.O., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.151-207, Refs. p.198-207.
Ice loads, Offshore structures, Ice pressure, Ice conditions, Ice mechanics, Ice creep, Stresses, Ice solid interface, Sea ice, Ice crystal structure, Brittleness, Design.

39-3499
On the state of art of statistical approaches to ice mechanics.
Bercha, F.G., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.209-238, Refs. p.235-238.
Ice loads, Ice mechanics, Offshore structures, Drift, Mathematical models, Statistical analysis, Computer applications.

39-3500
Forces associated with ice pile-up and ride-up.
Sodhi, D.S., et al, MP 1881, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.239-262, Refs. p.257-262.
Kovacs, A.
Ice loads, Ice pileup, Ice override, Floating ice, Ice mechanics, Ice pressure, Ice solid interface, Wind factors, Ocean waves, Analysis (mathematics), Pressure ridges.
A review of the literature on shore ice pile-up and ride-up observations is presented along with the average forces associated with the phenomena. Besides wind/water driving forces, it is postulated that storm surges or waves may also carry the floating ice sheet farther inland, where damage to structures and human lives is possible. A brief review is presented of the analytical and experimental work done to understand the behavior of ice sheets in relation to its piling or riding up the beach. A short summary of each model study that is reported in open literature is also given.

39-3501
Methods for determining ice forces due to first- and multi-year ridges.
Krankkala, T., et al, IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.263-287, 18 refs.
Määttänen, M.
Ice pressure, Ice loads, Pressure ridges, Offshore structures, Ice mechanics, Ice breaking, Ice structure, Ice cover thickness.

39-3502
Thermal ice forces against isolated structures.
Sanderson, T.J.O., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.289-299, 19 refs.
Ice loads, Offshore structures, Ice mechanics, Thermal expansion, Temperature effects.

39-3503
Ice engineering in 1984.
Michel, B., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.301-325, 28 refs.
Ice control, Engineering, River ice, Lake ice, Frazil ice, Ice booms, Ice jams, Ice pressure, Ports, Design.

39-3504
Environmental problems in the Arctic.
Loken, O.H., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.327-345, 8 refs.
Environmental impact, Environmental protection, Polar regions.

39-3505
Advancements in icebreaker technology.
Schwarz, J., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.347-363, 10 refs.
Icebreakers, Ice breaking, Design, Strength.

39-3506
River ice breakup.
Beltaos, S., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.365-386, Refs. p.384-386.
Ice breakup, River ice, Ice jams, Floods, Ice loads, Structures, Ice erosion, Ice cracks.

39-3507
Exploration and production concepts and projects for Arctic offshore.
Frederking, R.M.W., IAHR International Symposium on Ice, 7th, Hamburg, F.R.G., Aug. 27-31, 1984. Proceedings, Vol.4, [1984], p.387-414, Refs. p.408-411.
Exploration, Petroleum industry, Ice conditions, Sea ice, Offshore structures, Ice loads, Offshore drilling, Hydrocarbons, Ice mechanics, Artificial islands.

39-3508
Reference book on construction in water under severe climatic conditions. [Spravochnik po stroitel'stvu v vodnoĭ srede v surovykh klimaticheskikh usloviiakh], Gordes, E.G., et al, Leningrad, Strolizdat, 1984, 383p., In Russian with abridged English table of contents enclosed. 52 refs.
Narbut, R.M.
Hydraulic structures, Shore erosion, Slope protection, Ice pressure, Ice loads, Ice erosion, Caissons, Earthwork, Piles, Concrete placing, Underwater ice, Pipelines, Underwater acoustics.

39-3509
On using the short-wave portion of the millimeter-wave region for radiometric sensing of fresh-water ice on water.
Malyshenko, IU.I., et al, *Soviet journal of remote sensing*, 1984, 2(3), p.513-519, Translated from Issledovanie Zemli iz kosmosa. 10 refs.
Vakser, I.Kh., Levda, A.S.
Remote sensing, Radiometry, Ice cover thickness, Snow depth, Brightness, Temperature measurement, Absorption, River ice, Lake ice.

39-3510
Water resources of the Chita region. [Vodnye resursy Chitinskoĭ oblasti],
Chechel', A.P., Novosibirsk, Nauka, 1985, 97p., In Russian with English table of contents enclosed. Refs. p.90-96.
Natural resources, Water reserves, Water supply, Taiga, Permafrost beneath rivers, Permafrost hydrology, Permafrost distribution, Mapping, Permafrost thickness.

39-3511
Soil-landscape relations at selected sites along environmental gradients in northern Alaska.
Everett, K.R., *Ohio. State University. Columbus Research Foundation. Report,* May 1981. 14037.1-GS, 16847.1-GS, 357p., ADA-099 583. Refs p.349-357.
Permafrost, Tundra, Landforms, Soils, Topographic features, Hydrology, Vegetation, Maps, Environments.

39-3512
Great Scandinavian ice sheet.
Wang, J., et al, *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.1-14, 16 refs., In Chinese with English summary.
Derbyshire, E.
Glaciation, Glacial erosion, Glacier oscillation, Ice sheets, Paleoclimatology, Pleistocene, Radioactive age determination, Ice cover thickness.

39-3513
Preliminary research on some characteristics of the spectral reflection of snow cover.
Cao, M., et al, *Journal of glaciology and geocryology, Sep. 1984, 6(3), p.15-26, 6 refs., In Chinese with* English summary.
Feng, X., Jin, D.
Albedo, Snow optics, Spectra, Reflection, Grain size, Snow density.

39-3514
Shapes and features of glaciogenic gravels.
Li, J., et al, *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.27-29, 5 refs., In Chinese with English summary.
Zhou, S.
Glacial deposits, Gravel, Striations, Glaciation.

39-3515
Reassessment on the thickness of Glacier No.1 at the headwater of Urumqi River, Tianshan, by gravimetry.
Zeng, Z., *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.31-38, 2 refs., In Chinese with English summary.
Glacier thickness, Mountain glaciers, Landforms, *Gravimetric prospecting, Glacier beds, China—Tian* Shan.

39-3516
Sedimentary types and processes of end moraines since last ice-age in the headwater of Urumqi River, Tianshan.
Feng, Z., et al, *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.39-49, 4 refs., In Chinese with English summary.
Qin, D.
Glacial deposits, Geomorphology, Moraines, Sedimentation, Paleoclimatology, Grain size, Glaciation, *China—Tian Shan.*

39-3517
Discussion on the fluctuation and the environment since Main Würm glaciation in the headwater of Urumqi River, Tianshan.
Qin, D., et al, *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.51-62, 19 refs., In Chinese with English summary.
Feng, Z., Li, J.
Glaciation, Paleoclimatology, Glacier oscillation, Glacial erosion, Snow line, Ice volume, Climatic changes.

39-3518
***Analysis of the destruction of ecological environment* and the drying up of rivers in high and cold mountainous region.**
Du, W., *Journal of glaciology and geocryology,* Sep. *1984, 6(3), p.63-68, In Chinese with English summary.*
Permafrost distribution, Ecology, Environmental impact, Climatic changes, Mountains, *Forest land.*

39-3519
Discussion on design of frost-preventing layer for pavements in districts of frozen ground.
Bing, W., *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.69-76, 5 refs., In Chinese with English summary.
Permafrost beneath roads, Pavements, Frozen ground mechanics, Frost protection, Frost action, Tests, Construction materials, Thermal properties.

39-3520
Argument on and future of the problems of the Pleistocene glaciers in the eastern part of China.
Cui, Z., et al, *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.77-86, 29 refs., In Chinese with English summary.
Xie, Y.
Glaciation, Geomorphology, Periglacial processes, Mountain glaciers, Pleistocene, Ecology, Climatic changes.

39-3521
Fabric characteristics and genesis of the diamicton at Yangjinoling, Lushan.
Deng, X., *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.87-90, 3 refs., In Chinese with English summary.
Gravel, Mudflows, Moraines, Mountains, China—Lushan.

39-3522
Study of glacier and mud flows in Langtang, Nepal (Himalaya Mts.).
Zheng, B., *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.91-94, In Chinese
Glacier flow, Mudflows, Nepal—Langtang River.

39-3523
Glacial highway.
Wang, Z., et al, *Journal of glaciology and geocryology,* Sep. 1984, 6(3), p.95-96, In Chinese
Su, Z.
Ice roads, *Mountain glaciers,* Glacier surfaces.

39-3524
Latent heat of frozen saline coarse-grained soil.
Vinson, T.S., et al, *Journal of geotechnical engineering,* May 1985, 111(5), p.607-623, 14 refs.
Jahn, S.L.
Frozen ground thermodynamics, Latent heat, Saline soils, Offshore structures, Heat transfer, Thermal regime, Ground thawing, Measuring instruments.

39-3525
Course in general geophysics. Fundamentals of oceanology. [*Kurs obshchei* geofiziki. Osnovy okeanologii],
Gusev, A.M., Moscow, Universitet, 1983, 247p., In Russian with abridged English table of contents enclosed. 61 refs.
Ocean environments, Sea ice distribution, Air water interactions, *Sea water freezing, Heat balance,* Temperature distribution, Ice conditions.

39-3526
Data from antarctic ice cores: climatic and environmental changes since the last glacial maximum. [Les données des carottes de glace de l'Antarctique: Evolution du climat et de l'environnement atmosphérique depuis le dernier maximum glaciaire],
Lorius, C., *Université de Bordeaux I. Institut de géologie du bassin d'Aquitaine, Talence. Bulletin,* May 1983, No.34, Paléoclimats. Journées de Bordeaux, p.37-49, In French with English summary. Refs. p.46-49.
DLC QE268.B587a
Sea ice, Ice cores, Atmospheric composition, Glaciation, Paleoclimatology.
Available data from inland and coastal drilled antarctic ice cores are reviewed. The data permit the characterization of the atmospheric environment during the late glacial maximum and the description of changes associated with the deglaciation. A global increase of about 1.3 for the atmospheric CO2 concentration happened first during the late glacial maximum Holocene transition (200 to 270 ppmv) and secondly over the last century or so (260 to 340 ppmv); these comparable CO2 increases correspond to very different climatic changes and time scales. In comparison the antarctic ice sheet experienced relatively minor changes; ice core studies suggest a slight increase of ice thickness over the high plateau since the end of the late glacial maximum but a significant decrease in coastal areas. This can be explained by a geographically different impact of various factors which control the ice sheet evolution. (Auth. mod.)

39-3527
Search and collection of Yamato meteorites in the 1982-83 field season, Antarctica.
Katsushima, T., et al, *Tokyo. National Institute of Polar Rsearch. Memoirs,* Dec. 1984, Special issue No.35, p.1-8, 2 refs.
Rheology, Glacier flow.
211 specimens of meteorites were found in the Meteorite Ice Field near the Yamato Mountains in 1982-83, with a total weight of over 35 kg. A preliminary study shows that the Yamato-82 meteorites include 30 carbonaceous chondrites, 3 *diogenites,* 13 eucrites, 3 unclassified achondrites and a large number of chondrites. Among them, more than 50 specimens were found in the limited area within 1 km in diameter, 25 km south from Kuwagata Nunatak of the Minami-Yamato Nunataks. Such a meteorite-concentrated area as this suggests that sub-ice mountains may exist in the bare ice area, and that the ice flow carrying the meteorites forms a horizontal convergence. (Auth. mod.)

39-3528
Detailed calculation of modified radar equation for detecting meteorites buried within the ice by radio echo sounding.
Tajima, K., et al, *Tokyo. National Institute of Polar Research. Memoirs,* Dec. 1984, Special issue No.35, p.9-17, 5 refs.
Nishio, F.
Radio echo soundings, Glacier flow.
The scattered field near a radar is calculated and an accurate radar equation is derived. A detailed calculation of the modified radar equation indicates that the intensity of echo reflected from a meteorite buried in the ice is such as to be detected by the present radio sounding apparatus. The detectable domain for iron meteorites is larger than that for *stony meteorites,* indicating that if the diameter is identical, the detectable depth for iron meteorites must be deeper than that for *stony meteorites.* The detectable domain extends to a smaller diameter of *meteorites and a larger depth* using a higher frequency in the case of the Rayleigh scattering, but for iron meteorites, the frequency dependence on the detectable domain becomes reciprocal, showing resonance phenomena for 400 MHz at diameters larger than 10 cm where the scattering aspect, due to meteorite pieces dispersed in the ice, changes from Rayleigh scattering to Mie scattering. (Auth. mod.)

39-3529
***Air-cushion* vessels.** [Suda na vozdushnoĭ podushke],
Liubimov, V.I., et al, Moscow, Transport, 1984, 207p., In Russian with English table of contents enclosed.
Pospelov, V.I., Gorbunov, IU.V.
Snow cover effect, Air cushion vehicles, Ships, Amphibious vehicles, Shores, Ice navigation, Land ice, Ice breaking, Ice jams.

39-3530
Comparison of antarctic sea ice data sets and inferred trends in ice area.
Sturman, A.P., et al, *Journal of climate and applied meteorology,* March 1985, 24(3), p.275-280, 10 refs.
Anderson, M.R.
Ice edge, Data processing, Sea ice distribution.
A comparison is made of seven antarctic sea ice data sets developed since 1980, on the basis of techniques of analysis and inferred temporal variations. Navy-NOAA Joint Ice Center sea ice charts are the basic data for all seven studies, but techniques used to derive ice areas vary significantly between studies. Sources of variation include the choice of a single week to represent a month, the characteristic measured (i.e., latitude of *ice edge* or actual ice area—with or without polynya), and the sea ice concentration used to determine the ice edge. The resulting data sets tend to indicate similar long term trends between 1973 and 1982. However, the estimates of mean annual and mean monthly ice areas vary distinctly between studies. This variability is often explainable *in terms of the* different techniques of analysis, but in some cases is not. The *differences* identified between these analyses suggest that caution should be taken in applying or extending these data sets. (Auth.)

39-3531
Linear prediction of sea ice anomalies.
Johnson, C.M., et al, *Journal of geophysical research,* June 20, 1985, 90(D3), p.5665-5675, Refs. p.5674-5675.
Lemke, P., Barnett, T.P.
Ice forecasting, Sea ice distribution, Ice models.
Stationary and cyclostationary statistical models are developed to predict Arctic and antarctic sea ice anomalies, using as predictors previous sea ice, atmospheric, and oceanic anomalies. A prediction model hierarchy is developed by using first internal (i.e., sea ice) predictors, including persistence, lateral advection, and diffusion, and a cyclostationary model that allows the prediction coefficients to vary seasonally. An external cyclostationary model hierarchy is developed next to investigate the ability of atmospheric winds, heat flux proxies, air temperatures, and sea surface temperatures (SST's) to predict sea ice extent. In the Arctic the highest skill was generally achieved by the *cyclostationary.* In the southern ocean, especially off East Antarctica, the model that included lateral advection and diffusion outperformed both persistence and the cyclostationary internal model. In the Weddell Sea and the Ross Sea, persistence proved to be the best sea ice predictor. No external models were tested for Antarctic sea ice because of insufficient data. (Auth. mod.)

39-3532
Secular variations in cyclone frequencies near the Drake Passage, Southwest Atlantic.
Mayes, P.R., *Journal of geophysical research,* June 20, 1985, 90(D3), p.5829-5839, Refs. p.5837-5839.
Pack ice, Sea ice distribution, Atmospheric disturbances, Drake Passage, Antarctica—Weddell Sea.
Analysis of a 22-year sequence of summer and winter cyclone frequencies for the Drake Passage-Weddell Sea area produces important differences from previous short term studies. Two principal cyclone tracks are shown to occur in both seasons at around 55 and 65 S. Principal components analysis suggests that the minor cyclone track was more variable than the major track in both seasons. Variations in cyclone frequency at high latitudes appear to be directly linked to the strength of the

westerly circulation actively enhancing lee cyclogenesis near the Antarctic Peninsula. Investigation of the relationship between the predominant cyclone track and the inferred movement of the Weddell Sea pack ice does not support the hypothesis that cyclonic activity is determined by the position of the pack ice boundary. Furthermore, there is an observed, but not statistically proven, link between cyclone movement and the mean annual position of the Oceanic Polar Front. (Auth.)

39-3533

Equipment for ice removal and ice cutting work. [Mekhanizatsiia vymorozochnykh i ledoreznykh rabot],
Glebov, A., et al, *Rechnoĭ transport*, 1984, No.11, p.28, In Russian.
Lezin, D., Baranovskiĭ, A.
Icebound rivers, Ships, Ice cutting, Ice removal.

39-3534

Icy August -84. [Ledovyĭ avgust -84],
Biriukov, E., *Rechnoĭ transport*, 1985, No.3, p.23, 28, In Russian.
Ice navigation, Icebreakers, Sea ice distribution, Ice surveys, Polar regions, Ice reporting, USSR—Yana Bay.

39-3535

Bearing strength of structures built in frozen ground. [Nesushchaia sposobnost' sooruzheniĭ v merzlom grunte],
Savko, B., *Rechnoĭ transport*, 1985, No.2, p.38-39, In Russian.
Ports, Hydraulic structures, Moorings, Permafrost beneath structures, Polar regions, Permafrost beneath rivers.

39-3536

New method of heating monolithic concrete structures. [Novyĭ sposob obogreva monolitnykh betonnykh konstruktsiĭ],
Timofeenko, L., et al, *Promyshlennoe stroitel'stvo i inzhenernye sooruzheniia*, Jul.-Sep. 1984, No.3, p.17, In Russian.
Lysiuk, V.
Winter concreting, Concrete placing, Formwork (construction), Electric heating, Concrete freezing, Concrete hardening, Concrete strength.

39-3537

Reloading frozen coal in the Zhdanov port. [Opyt peregruzki smerzshikhsia ugleĭ v Zhdanovskom portu],
Sharapov, V.V., et al, *Promyshlennyĭ transport*, Dec. 1984, No.12, p.6-7, In Russian.
Shashkin, A.S., Vel'kin, O.T.
Frozen cargo, Coal, Unloading, Artificial melting, Equipment.

39-3538

Equipment for thermomechanical loosening of frozen cargo. [Ustanovka dlia termomekhanicheskogo rykhleniia smerzshikhsia gruzov],
Donov, P.A., *Promyshlennyĭ transport*, Dec. 1984, No.12, p.7, In Russian.
Frozen cargo, Artificial melting, Electric heating, Vibration.

39-3539

Mashine for opening drainage ditches. [Mashina vskryvaet kiuvety],
Stramous, V.M., et al, *Put' i putevoe khoziaĭstvo*, 1984, No.12, p.16, In Russian.
Divin, O.A., Samokhin, S.A., Kuz'menko, V.V.
Roads, Ice breaking, Winter maintenance, Ice removal, Drainage, Equipment.

39-3540

Geochemical landscapes of the Karelia-Kola Peninsula region. [Geokhimicheskie landshafty Karelo-Kol'skogo regiona],
Stukkel, G.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Geologiia i razvedka*, Feb. 1985, No.2, p.14-21, In Russian. 13 refs.
Swamps, Ice rafting, Soil formation, Landscape types, Glacier flow, Soil composition, Moraines, Glaciation, Soil chemistry, Glacial erosion, Ground ice, USSR—Kola Peninsula, USSR—Karelia.

39-3541

Temperature gradient effect on the process of mechanical dehydration of peat in a cryogenic state. [Vliianie temperaturnogo gradienta na protsess mekhanicheskogo obezvozhivaniia torfa v kriogennom sostoianii],
Aleksandrov, B.M., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Gornyĭ zhurnal*, 1984, No.12, p.15-17, In Russian. 4 refs.
Sherstnev, V.I.
Peat, Artificial freezing, Drying, Temperature gradients, Pressure.

39-3542

Automatic design of ice melting. [Sistema avtomatizirovannogo proektirovaniia plavki gololeda],
Shnell', R.V., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Energetika*, Mar. 1985, No.3, p.34-39, In Russian. 3 refs.
Abramov, I.V.
Power line icing, Ice melting, Electric heating, Design, Computer applications.

39-3543

Parameters and schemes for substituting overhead power lines in ice-melting circuits of the wire-wire type. [Parametry i skhemy zameshcheniia vozdushnykh liniĭ elektroperedachi v skhemakh plavki gololeda tipa provod-provod],
Zhezhelenko, I.V., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Energetika*, Apr. 1985, No.4, p.3-8, In Russian. 4 refs.
Marchenko, I.I.
Power line icing, Ice melting, Electric heating.

39-3544

Analyzing structures of light-weight steel trusses for frost resistance. [Analiz khladostoĭkosti konstruktivnykh reshenиĭ legkikh stal'nykh ferm],
Sil'vestrov, A.V., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1985, No.3, p.116-119, In Russian. 6 refs.
Karaman, V.V.
Steel structures, Frost resistance, Design.

39-3545

Corrosion of steel in concretes containing antifreeze sodium chloride admixtures. [K voprosu o korrozii stali v betone s protivomoroznymi khloristymi dobavkami],
Rozental', N.K., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1985, No.3, p.126-129, In Russian. 1 ref.
Kashurnikov, N.M.
Steels, Reinforced concretes, Corrosion, Concrete admixtures, Antifreezes, Prefabrication, Frost resistance.

39-3546

Methods of determining boulder accumulations and sporadic permafrost when mining placer deposits. [Metody opredeleniia valunnykh skoplenиĭ ochagovoĭ merzloty pri razrabotke rossypeĭ],
Matveev, A.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Gornyĭ zhurnal*, 1985, No.2, p.14-18, In Russian.
Bagautinov, G.A., Bakaev, V.P.
Placer mining, Electromagnetic prospecting, Sporadic permafrost, Gravel, Rocks, Clay soils, Permafrost structure.

39-3547

Altitudinal belts of the Alichur River basin (Pamirs) distinguished from composition of flora and vegetation. [K vysotnoĭ poiasnosti basseĭna reki Alichura (Pamir) po sostavu flory i rastitel'nosti],
Ukhacheva, V.N., *Russia. Ministerstvo vysshego is rednego spetsial'nogo obrazovaniia. Nauchnye doklady vysshei shkoly. Biologicheskie nauki*, 1984, No.12, p.64-69, In Russian. 9 refs.
Plant ecology, Vegetation patterns, Plant physiology, Ecosystems, Altitude, Alpine landscapes, Slope orientation, Insolation, Classifications, Glaciation.

39-3548

Melting of ice in a porous medium. [Plavlenie l'da v poristoĭ srede],
Anisimov, M.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Neft' i gaz*, Oct. 1984, No.10, p.83-88, In Russian. 9 refs.
Ground ice, Frozen fines, Ice melting, Melting points, Porosity, Permafrost, Gas wells, Oil wells, Drilling.

39-3549

Peculiarities of casing crumpling in producing wells in the frozen rock interval. [Osobennosti smiatiia ekspluatatsionnykh kolonn skvazhin v intervale merzlykh porod],
Medvedskiĭ, R.I., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Neft' i gaz*, Feb. 1985, No.2, p.30-35, In Russian. 4 refs.
Batalov, D.M.
Oil wells, Well casings, Deformation, Permafrost, Cements, Unfrozen water content, Frost penetration, Ice pressure.

39-3550

Using foam as circulation fluid in drilling wells. [Burenie skvazhin s primeneniem peny],
An, A.A., et al, *Razvedka i okhrana nedr*, Aug. 1984, No.8, p.59-61, In Russian.
D'iakonov, S.G., IArantsev, A.V.
Rock drilling, Rotary drilling, Drilling fluids, Permafrost.

39-3551

Drilling large-diameter wells in perennially frozen placers. [Burenie skvazhin bol'shogo diametra v mnogoletnemerzlykh rossypiakh],
Minakov, V.M., et al, *Razvedka i okhrana nedr*, Jan. 1985, No.1, p.38-41, In Russian.
Kryzhanovskiĭ, S.A., Morozov, I.V., Stepanov, P.M.
Placer mining, Permafrost, Percussion drilling, Rotary drilling, Drill core analysis.

39-3552

Observations of water mass modification in the vicinity of an iceberg.
Allison, I., et al, *Iceberg research*, Jan. 1985, No.9, p.3-9, 8 refs.
Kerry, K., Wright, S.
Ice melting, Acoustic measurement, Icebergs, Meltwater.

Measurements of water salinity and temperature profiles to 500m depth were made at various close distances around two icebergs during Antarctic Division marine science cruises in 1981/82 and 1982/83. Evidence of modification of the near surface water was found several hundreds of m from both icebergs. The T-S relationship of water around the first iceberg, which was in circumpolar deep water, suggests that convection alongside the iceberg is responsible for some of the observed changes, and that melt is occurring at considerable depth. The convection also decreases the depth of the pycnocline close to the iceberg. The second iceberg, which was in cold shelf water, was melting only at depths above the seasonal halocline. Water of a different characteristic than the bulk of the column is found at depths from 200-350m around and behind the iceberg, but not in front. Close to the iceberg there is a highly reflecting acoustic layer at about 40m depth, which is not found away from the iceberg. (Auth. mod.)

39-3553

Iceberg scours: what do they really look like.
Woodworth-Lynas, C.M.T., et al, *Iceberg research*, Jan. 1985, No.9, p.10-14, 6 refs.
Day, T., Seidel, C., Seidel, M.
Ice scoring, Icebergs, Bottom topography, Ocean bottom, Bottom sediment.

39-3554

Heat and moisture advection over antarctic sea ice.
Andreas, E.L., *Monthly weather review*, May 1985, 113(5), MP 1888, p.736-746, 27 refs.
Ice edge, Heat loss, Sea ice distribution, Pack ice, Antarctica—Weddell Sea

Surface-level meteorological observations and upper-air soundings in the Weddell Sea provide the first *in situ* look at conditions over the deep antarctic ice pack in the spring. The surface-level temperature and humidity were relatively high, and both were positively correlated with the northerly component of the 850 mb wind vector as far as 600 km from the ice edge. Since even at its maximum extent, at least 60% of the antarctic ice pack is within 600 km of the open ocean, long-range atmospheric transport of heat and moisture from the ocean must play a key part in antarctic sea ice heat and mass budgets. From one case study, the magnitude of the ocean's role is inferred: at this time of year the total turbulent surface heat loss can be greater under southerly winds than under northerly ones. (Auth.)

39-3555

Distributional patterns of fishes in an Alaskan Arctic lagoon.
Craig, P.C., et al, *Polar biology*, 1985, 4(1), p.9-18, Refs. p.17-18.
Griffiths, W.B., Haldorson, L., McElderry, H.
Marine biology, Animals, Ecology, Beaufort Sea.

39-3556

Cryptoendolithic microbial environment in the antarctic cold desert: temperature variations in nature.
McKay, C.P., et al, *Polar biology*, 1985, 4(1), p.19-25, 15 refs.
Friedmann, E.I.
Cryobiology, Freeze thaw cycles, Temperature measurement, Ecology, Microbiology, Antarctica—Victoria Land.

In the antarctic cold desert, cryptoendolithic microorganisms live under the surface of porous sandstone rocks. During the austral summer, the environment of the near-surface rock layers colonized by organisms is characterized by two kinds of temperature oscillations, both occurring across the freezing point. Low-frequency (diurnal) and large-amplitude (up to about 20C) oscillations on the sunlit surface of rocks result in a daily freeze-thaw cycle. The high-frequency oscillations are caused by the cooling effect of wind gusts on rock surfaces that are much warmer than ambient air temperatures. High-frequency oscillations result in a rapid freeze thaw cycle on the surface, which, however, does not reach the microbial zone. (Auth. mod.)

39-3557
Effects of freeze-thaw cycles and leaching on the loss of soluble carbohydrates from leaf material of two subantarctic plants.
Hurst, J.L., et al, *Polar biology*, 1985, 4(1), p.27-31, 21 refs.
Pugh, G.J.F., Walton, D.W.H.
Freeze thaw cycles, South Georgia.
Leaves and litter of two phanerogams (*Acaena magellanica* (Lam.) Vahl and *Poa flabellata* (Lam.) Hook. f.) were collected in spring on the subantarctic island of South Georgia. Leaves immersed in water lost up to 80% of their total available soluble carbohydrates after 6-8 h. The loss of potassium and polonium followed a similar pattern to that shown by the carbohydrates. Up to 9 daily freeze/thaw cycles gave no increase in metabolite loss for senescent leaves. GLC analysis showed sucrose to be the principal leachate from *Acaena*. Sucrose, glucose and fructose were the main leachates from *Poa*. A significant proportion of the soluble carbohydrates in standing dead leaves was trehalose. The relationship of such leachates to microbial decomposition is discussed. (Auth.)

39-3558
Modern and Holocene environments of the North Slope of Alaska.
Wilson, M.J., Durham, England, University, 1984, 253p., M.A. thesis. Refs. p.226-236.
Plant ecology, Glacial geology, Tundra, Environments, Peat, Paleoclimatology, Climatic changes, Pollen, Sedimentation, United States—Alaska—North Slope.

39-3559
Greenland ice core: geophysics, geochemistry, and the environment.
Langway, C.C., Jr., ed, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, 118p., Refs. passim. For individual papers see 39-3560 through 39-3576 or F-31909 through F-31912.
Oeschger, H., ed, Dansgaard, W., ed.
Ice cores, Geochemistry, Geophysical surveys, Drill core analysis, Ice physics, Ice sheets, Glacier surveys, Climatic changes, Paleoclimatology, Greenland, Antarctica.
This volume contains articles reporting results of the field work and laboratory investigations carried out by scientists from several nations participating in the Greenland Ice Sheet Program

39-3560
Greenland Ice Sheet Program in perspective.
Langway, C.C., Jr., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.1-8, Refs. p.6-8.
Oeschger, H., Dansgaard, W.
Ice cores, Ice sheets, Ice physics, Ice mechanics, Paleoecology, Paleoclimatology, Research projects, Drill core analysis, Boreholes, Greenland, Antarctica—Vostok Station, Antarctica—Amundsen-Scott Station.
The Greenland Ice Sheet Program is described, a comparison of Greenland and antarctic sites is presented, and the following conclusions are offered: both the antarctic and Greenland ice sheets are rich sources of information for Quaternary environmental conditions and processes acting upon the earth's surface during this period; a new long-term research program of core drilling to bedrock should systematically be initiated and carefully coordinated in both polar regions; this program should utilize the most advanced drilling and core study technology; additional paleoenvironmental records from several geographically spaced deep ice cores would provide answers to the many questions of past climatic and environmental events, and better define, update, and contribute new proxy data for modeling projections on a hemispheric and global basis.

39-3561
Contribution of ice core studies to the understanding of environmental processes.
Oeschger, H., *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.9-17, 31 refs.
Glacier surveys, Ice cores, Environments, Climatic changes, Radioactive age determination, Paleoclimatology, Drill core analysis, Greenland.

39-3562
Battery powered, instrumented deep ice core drill for liquid filled holes.
Gundestrup, N.S., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.19-22, 12 refs.
Johnsen, S.J.
Ice coring drills, Boreholes, Equipment, Greenland.

39-3563
Ultrasonic velocities and crystalline anisotropy in the ice core from Dye 3, Greenland.
Herron, S.L., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.23-31, 23 refs.
Langway, C.C., Jr., Brugger, K.A.
Ice cores, Ultrasonic tests, Ice crystal structure, Ice physics, Anisotropy, Velocity, Ice crystal size, Greenland.

39-3564
Measurements of a kind of DC-conductivity on cores from Dye 3.
Neftel, A., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.32-38, 17 refs.
Ice cores, Ice electrical properties, Electrical resistivity, Measuring instruments, Greenland.

39-3565
Mechanical properties of fresh ice core from Dye 3, Greenland.
Shoji, H., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.39-48, 30 refs.
Langway, C.C., Jr.
Ice mechanics, Ice cores, Ice creep, Compressive properties, Shear stress, Strain tests, Air entrainment, Rheology, Grain size, Greenland.

39-3566
Bedrock topography of the Greenland ice sheet in the Dye 3 area.
Overgaard, S., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.49-56, 27 refs.
Gundestrup, N.S.
Glacier beds, Ice sheets, Radio echo soundings, Ice electrical properties, Glacier thickness, Topographic features, Temperature distribution, Maps, Greenland.

39-3567
Dating the Dye 3 deep ice core by flow model calculations.
Reeh, N., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.57-65, 25 refs.
Johnsen, S.J., Dahl-Jensen, D.
Ice dating, Ice cores, Glacier flow, Ice mechanics, Shear stress, Models, Temperature effects, Greenland.

39-3568
Be-10 variations in polar ice cores.
Beer, J., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.66-70, 29 refs.
Ice composition, Chemical analysis, Ice cores, Fallout, Variations, Greenland.

39-3569
Dating and climatic interpretation of two deep Greenland ice cores.
Dansgaard, W., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.71-76, 42 refs.
Ice dating, Climatic changes, Ice cores, Ice mechanics, Pleistocene, Isotope analysis, Greenland.

39-3570
Chloride, nitrate, and sulfate in the Dye 3 and Camp Century, Greenland ice cores.
Herron, M.M., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.77-84, 16 refs.
Langway, C.C., Jr.
Ice composition, Ice cores, Chemical analysis, Ions, Paleoclimatology, Climatic changes, Paleoecology, Greenland.

39-3571
CO2 concentration in air extracted from Greenland ice samples.
Stauffer, B., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.85-89, 14 refs.
Neftel, A., Oeschger, H., Schwander, J.
Air entrainment, Atmospheric composition, Ice cores, Carbon dioxide, Climatic changes, Bubbles, Ice structure, Ice composition, Greenland.

39-3572
Continuous impurity analysis along the Dye 3 deep core.
Hammer, C.U., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.90-94, 22 refs.
Ice cores, Impurities, Ice composition, Chemical analysis, Particles, Radioactive age determination, Dust, Paleoclimatology, Greenland, Antarctica—Byrd Station.
Preindustrial Greenland ice-sheet impurities consist of marine, continental, volcanic, stratospheric, and extraterrestrial material. In order to estimate the contribution of the various impurity sources, the concentration of insoluble and soluble material was measured on two Greenland deep cores. Ice from the Wisconsin glaciation has 3 to 70 times higher dust concentrations than does Holocene ice in both Greenland deep cores. Detection of individual volcanic eruptions by acidity measurements is prevented because Wisconsin ice is generally alcalic, and chemical detection is hampered by the high and variable impurity levels. However, Byrd core analysis shows that Antarctica is better suited for this kind of analysis, because the Wisconsin ice is acidic, and the impurity level is much lower than in Greenland. (Auth. mod.)

39-3573
Historical record of artificial radioactive fallout from the atmosphere in polar glaciers.
Koide, M., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.95-100, 11 refs.
Goldberg, E.D.
Fallout, Ice cores, Ice composition, Isotope analysis, Atmospheric circulation, Human factors, Greenland, Antarctica—Dome C.
Polar glaciers maintain a record of artificial radionuclide atmospheric fallout which can be developed on a year to year basis. Some homogenization of the record results from summer melting and subsequent melt-water percolation. *Fallout from the* U.S. dominated tests of the 1950s differs from that of the U.S.S.R. dominated tests in the 1960s. Further, differences in the atmospheric transport of the transuranics, alkalis, alkaline earths, and *tritium were observed*. (Auth.)

39-3574
Present status and future of lead studies in polar snow.
Patterson, C.C., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.101-104, 24 refs.
Boutron, C., Flegal, R.
Ice composition, Snow composition, Isotope analysis, Spectroscopy, Pollution, Lead (metal), Greenland.
Recent investigations of lead concentrations in polar snows carried out in the Caltech ultraclean laboratory using mass spectrometric isotope dilution techniques confirm earlier work showing lead to be 1pg/g in old (Holocene) Greenland ice. These later studies also show that concentrations of lead in Antarctica are <4pg/g in surface snows and 1pg/g in ancient ice. It has not yet been possible for investigators to reduce lead contamination associated with collection procedures to allowable low levels in antarctic surface snow. It will be necessary to inaugurate new and better collection procedures to solve this problem. (Auth.)

39-3575
Geophysical survey of subglacial geology around the deep-drilling site at Dye 3, Greenland.
Jezek, K.C., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.105-110, 14 refs.
Roeloffs, E.A., Greischar, L.L.
Geophysical surveys, Glacier beds, Glacial geology, Subglacial observations, Boreholes, Topographic features, Geomorphology, Radar echoes, Tectonics, Greenland.

39-3576
Steady-state prediction of Dye 3 core features.
McInnes, B., et al, *American Geophysical Union. Geophysical monograph series*, 1985, No.33, p.111-117, 8 refs.
Radok, U.
Ice cores, Glacier mass balance, Glacier flow, Boreholes, Temperature distribution, Glacier thickness, Velocity, Greenland.

39-3577
Disordered structure of D2O ice VII from *in situ* neutron powder diffraction.
Jorgensen, J.D., et al, *Journal of chemical physics*, July 1, 1985, 83(1), p.329-333, 18 refs.
Worlton, T.G.
High pressure ice, Ice crystal structure, Heavy water, Hydrogen bonds, Neutron diffraction, Temperature effects.

39-3578
Foundations in permafrost and seasonal frost; Proceedings.
Session on Foundations in Permafrost and Seasonal Frost, Denver, CO, Apr. 29, 1985, MP 1730, New York, American Society of Civil Engineers, 1985, 62p., Refs. passim. For individual papers see 39-3579 through 39-3582.
Wuori, A., ed, Sayles, F.H., ed.
Permafrost beneath structures, Foundations, Pile structures, Rheology, Frozen ground mechanics, Loads (forces), Seasonal freeze thaw, Meetings, Design, Cold weather construction, Snow cover effect, Ground ice.

39-3579
Arctic foundation selection: a decision matrix.
LaVielle, C., et al, Session on Foundations in Permafrost and Seasonal Frost, Denver, CO, Apr. 29, 1985 Proceedings. Edited by A. Wuori and F.H. Sayles, New York, American Society of Civil Engineers, 1985, p.1-14, 9 refs.
Zeman, A.R., Dransfield, J.S.
Permafrost beneath structures, Foundations, Ground ice, Pile structures, Topographic features, Vegetation, Adhesion, Design, Engineering.

39-3580
Attenuating creep of piles in frozen soils.
Parameswaran, V.R., Session on Foundations in Permafrost and Seasonal Frost, Denver, CO, Apr. 29, 1985. Proceedings. Edited by A. Wuori and F.H. Sayles, New York, American Society of Civil Engineers, 1985, p.16-28, 25 refs.
Frozen ground mechanics, Pile structures, Rheology, Permafrost, Foundations, Loads (forces), Adhesion, Creep.

39-3581
Creep of a strip footing on ice-rich permafrost.
Sayles, F.H., MP 1731, Session on Foundations in Permafrost and Seasonal Frost, Denver, CO, Apr. 29, 1985. Proceedings. Edited by A. Wuori and F.H. Sayles, New York, American Society of Civil Engineers, 1985, p.29-51, 41 refs.
Permafrost beneath structures, Creep, Loads (forces), Stresses, Settlement (structural), Rheology, Strains, Tests, Compressive properties.
Creep settlement tests were performed on a strip footing founded on the surface of ice-rich aeolian silt permafrost. The tests consisted of applying four step loadings to a 10 in. (25.4 cm) wide concrete footing. The step loads produced constant stresses at the base of the footing of 28, 56, and 111 psi (0.193, 0.385, and 0.770 MPa) for test periods of 12000, 6000 and 3500 hours respectively. The testing was conducted at an ambient temperature of 28.4 F (-2.0 C) in the controlled environment of the USACRREL Permafrost Tunnel Facility which is located near Fox, Alaska. Settlement and settlement rates of the footing were measured. These measured values are compared with those computed by different proposed analytical methods that utilize results from unconfined compression creep tests performed on undisturbed soil taken from the testing site. Preliminary results indicate reasonable agreement between computed and measured values.

39-3582
Snow effects on pile design temperatures.
Metz, M.C., et al, Session on Foundations in Permafrost and Seasonal Frost, Denver, CO, Apr. 29, 1985. Proceedings. Edited by A. Wuori and F.H. Sayles, New York, American Society of Civil Engineers, 1985, p.52-60, 13 refs.
Rothbauer, J.E.
Permafrost beneath structures, Permafrost thermal properties, Snow cover effect, Pipeline supports, Soil temperature, Piles, Snow depth, Thermal regime, Tundra, Design, Geothermy.

39-3583
Comparison of Canadian and American classification systems for some Arctic soils of the Ungava-Labrador Peninsula.
Hendershot, W.H., *Canadian journal of soil science*, May 1985, 65(2), p.283-291, With French summary. 11 refs.
Permafrost, Soil classification, Cryogenic soils, Cryoturbation, Soil temperature.

39-3584
Effect of groundwater on soil formation in a morainal landscape in Saskatchewan.
Miller, J.J., et al, *Canadian journal of soil science*, May 1985, 65(2), p.293-307, With French summary. 15 refs.
Action, D.F., St. Arnaud, R.J.
Hummocks, Ground water, Soil formation, Moraines, Snowmelt, Landscapes, Runoff, Water table, Water flow.

39-3585
Mass loss in a forested bog: relation to hummock and hollow microrelief.
Farrish, K.W., et al, *Canadian journal of soil science*, May 1985, 65(2), p.375-378, 7 refs.
Grigal, D.F.
Hummocks, Peat, Decomposition, Swamps, Mass balance.

39-3586
Geomorphological effects of jökulhlaups and ice-dammed lakes, Jotunheimen, Norway.
Shakesby, R.A., *Norsk geografisk tidsskrift*, Mar. 1985, 39(1), p.1-16, 30 refs.
Subglacial drainage, Ice dams, Glacial lakes, Geomorphology, Glacial rivers, Crevasses, Norway—Jotunheimen.

39-3587
Some observations on ground temperatures and transport processes at a nivation site in northern Norway.
Hall, K.J., *Norsk geografisk tidsskrift*, Mar. 1985, 39(1), p.27-37, 18 refs.
Nivation, Soil temperature, Landscape development, Weathering, Ground thawing, Snow cover effect, Mass transfer, Norway.

39-3588
Short-term bathymetric changes in an ice-contact proglacial lake.
Duck, R.W., et al, *Norsk geografisk tidsskrift*, Mar. 1985, 39(1), p.39-45, 13 refs.
McManus, J.
Glacial lakes, Glacier oscillation, Echo sounding, Glacial deposits, Sedimentation, Geomorphology, Norway.

39-3589
Canadian Coast Guard ACIB—1982/83 trials.
Markham, P. de L., et al, *Canadian aeronautics and space journal*, Dec. 1984, 30(4), p.311-327, With French summary.
Laframboise, J.E., Ball, M.A.
Icebreakers, Air cushion vehicles, Ice breaking, Statistical analysis.

39-3590
Sound and the sea. [Zvuk i more],
Kliukin, I.I., Leningrad, Sudostroenie, 1984, 145p., In Russian with abridged English table of contents enclosed. Refs. p.142-144.
Ocean environments, Underwater acoustics, Sea ice distribution, Icebergs, Echo sounding, Military operation, Military equipment, Subglacial observations, Sound transmission, Sound waves, Subglacial navigation.

39-3591
Polar-Alpine botanical garden (Reference book). [Poliarno-Al'piĭskiĭ botanicheskiĭ sad (Spravochnik)],
Andreev, G.N., et al, Leningrad, Nauka, 1984, 91p., In Russian with English table of contents enclosed.
Introduced plants, Acclimatization, Polar regions, Frost resistance, Cryogenic soils, Soil chemistry, Nutrient cycle, Plant ecology.

39-3592
Peat bogs, their natural and economic significance. [Torfianye bolota, ikh prirodnoe i khoziaĭstvennoe znachenie],
P'iavchenko, N.I., Moscow, Nauka, 1985, 152p., In Russian with English table of contents enclosed. Refs. p.140-151.
Swamps, Organic soils, Peat, Vegetation patterns, Plant ecology, Ecosystems, Nutrient cycle, Plant physiology, Environmental protection, Soil formation, Classifications, Soil chemistry.

39-3593
Ways of controlling the fertility of developed peat soils in northern Europe. [Puti regulirovaniia plodorodiia osvoennykh torfianykh pochv Evropeĭskogo Severa],
Sin'kevich, E.I., Leningrad, Nauka, 1985, 267p., In Russian with abridged English table of contents enclosed. Refs. p.240-265.
Swamps, Frost penetration, Organic soils, Soil composition, Peat, Soil chemistry, Cryogenic soils.

39-3594
Udokan (natural resources and their development). [Udokan (prirodnye resursy i ikh osvoenie)],
Narkeliun, L.F., ed, Novosibirsk, Nauka, 1985, 230p., In Russian. For selected articles see 39-3595 through 39-3599. Refs. passim.
Mountains, Thermokarst, Mining, Permafrost distribution, Slope processes, Avalanches, Solifluction, Rock streams, Glacial rivers, Permafrost hydrology, Naleds, Pingos, Permafrost depth, Revegetation, Forestry.

39-3595
Slope processes in the area of the Udokan ore deposits. [Sklonovye protsessy v raĭone Udokanskogo mestorozhdeniia],
Krendelev, F.P., et al, Udokan (prirodnye resursy i ikh osvoenie) (Udokan (natural resources and their development)) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1985, p.5-53, In Russian. Refs. p.50-53.
Ponikarovskiĭ, V.N., Potemina, N.S., Skorniakov, L.N.
Mining, Minerals, Permafrost distribution, Snow cover distribution, Avalanches, Slope processes, Rock streams, Solifluction, USSR—Udokan Range.

39-3596
Recent formations in valleys of the Chara River basin. [Sovremennye dolinnye obrazovaniia Charskoĭ kotloviny],
Krendelev, F.P., et al, Udokan (prirodnye resursy i ikh osvoenie) (Udokan (natural resources and their development)) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1985, p.53-82, In Russian. 11 refs.
Nasyrova, R.A.
Thermokarst, Glacial rivers, Vegetation patterns, Valleys, Cryogenic soils, Moraines, Permafrost distribution, Permafrost hydrology, Naleds, Frozen fines, Vegetation patterns, Sands, Pingos, Ecosystems.

39-3597
Temperature inversions in the Chara basin. [Temperaturnye inversii v Charskoĭ kotlovine],
Pliukhin, B.V., et al, Udokan (prirodnye resursy i ikh osvoenie) (Udokan (natural resources and their development)) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1985, p.83-87, In Russian. 5 refs.
Prostomolotova, A.N.
Glacial rivers, River basins, Air temperature, Temperature inversions, Permafrost distribution, Wind factors, Radiation, Soil air interface, Heat transfer.

39-3598
Reforestation problems in the BAM zone. [Problemy lesovosstanovleniia v zone BAM],
Bobrinev, V.P., Udokan (prirodnye resursy i ikh osvoenie) (Udokan (natural resources and their development)) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1985, p.105-111, In Russian. 5 refs.
Forestry, Revegetation, Baykal Amur railroad, Permafrost distribution, Cryogenic soils, Plant physiology, Roots.

39-3599
Forest fire effect on hydrothermal regime of soil in the BAM zone. [Vliianie pozharov na gidrotermicheskiĭ rezhim pochv zony BAM],
Bondar', P.A., Udokan (prirodnye resursy i ikh osvoenie) (Udokan (natural resources and their development)) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1985, p.111-116, In Russian.
Taiga, Forest fires, Forest soils, Permafrost depth, Forestry, Cryogenic soils, Revegetation, Human factors.

39-3600
Variations of global water exchange. [Izmeneniia global'nogo vodoobmena],
Klige, R.K., Moscow, Nauka, 1985, 247p., In Russian with English table of contents. Refs. p.234-245.
Hydrologic cycle, Glacial hydrology, Land ice, Sea ice distribution, Rivers, Runoff, Discharge, Water balance, Ocean environments, Sea level, Water transport, Atmospheric circulation, Precipitation (meteorology), Continental slopes.
Chapters 5 and 7 of this book, reviewing the literature on global hydrologic cycles, deal with the continental glaciation regime and trends in the world ocean water regime. The discussion pertinent to the Southern Hemisphere in general, and to the Antarctic in particular, concerns the atmospheric temperature increases in the last century and the consequent water level increases through the melting of antarctic ice. The mean antarctic water balance for the period 1894-1975 is tabulated. A map comparing iceberg distribution in antarctic waters for the periods 1888-1897 and 1954-1958 shows that the northernmost boundary of iceberg occurrence receded in the latter period.

39-3601
Icebreakers and their design.
Tokunaga, Y., *Antarctic record*, March, 1985, No.84, p.2-7, In Japanese with English summary. 8 refs.
Icebreakers.
From a standpoint of ship design, this paper summarizes the development of major polar icebreakers in the world including the new Japanese icebreaker *Shirase* which replaced *Fuji*. (Auth.)

39-3602
Design consideration of two candidate propellers for icebreaking vessel.
Sasajima, T., et al, *Antarctic record*, March, 1985, No.84, p.8-25, With Japanese summary. 12 refs.
Takekuma, K., Kayo, Y.
Icebreakers, Propellers.
The propellers for ships operating in the Antarctic and Arctic regions encounter fragments of ice and sometimes are damaged according to the severity of ice load. The design of propellers for such ships is quite different from that of conventional ships, since in designing the propeller geometry, not only hydrodynamic performances requested are to be satisfied but also blades are to be strong enough to stand ice-milling loads. This study deals with the effect of propeller geometry on performance in open water and in ice. Two candidate propellers with different blade shape, ogival and lenticular sections, were designed for the Japanese icebreaker *Shirase*, by employing the existing ice-milling load estimation method of Jagodkin and the blade-pro-

peller shaft strength calculation method of Ignatev. The results show the specific features of each propeller blade section. (Auth.)

39-3603
Antarctic snow vehicle.
Hosoya, M., *Antarctic record,* March, 1985, No.84, p.26-35, In Japanese with English summary.
Snow vehicles, Antarctica—Showa Station.
This paper describes the following features involving antarctic snow vehicles: domestic market, changes, the use of the snow vehicle at Showa Station, and some of its problems. The Japanese Antarctic Research Expedition is presently equipped with three types of snow vehicle, SM50S, SM40S and SM20S. These vehicles are used in inland trips and sea ice exploring, in transportation of cargo to inland stations, as well as to Showa Station and its outskirts. (Auth.)

39-3604
Experimental hovercraft for the Antarctic.
Murao, R., et al, *Antarctic record,* March, 1985, No.84, p.36-55, In Japanese with English summary. 3 refs.
Air cushion vehicles, Antarctica—Showa Station.
An experimental hovercraft has been developed for tests on its utility, adaptability and operation in the antarctic environment. The craft is a 2.8 t plenum chamber type hovercraft with 60 cm depth flexible skirts fitted to its perimeter. Two rudders equipped within the air jet bleeded from the lift fan, and two puff ports which control the air jet provide directional control. In order to estimate the performance of the craft, the static thrusts were measured. In January 1981, the craft was unloaded on the fast ice about 40 km NW of Showa Station. After 3.5 hours' run it reached the station crossing small cracks and puddles. During the summer and winter seasons of 1981/82, 33 hours of running and sea-ice survey tests were carried out. Some trouble, such as the clogging of snow in the engine room, icing on the air outlet from fan scroll and tear of skirts was experienced. The process of planning, design, principal features, slope ascending capability and operation in the Antarctic of the experimental hovercraft are described. (Auth.)

39-3605
Report on aircraft operations in Japanese Antarctic Research Expedition.
Murakoshi, N., et al, *Antarctic record,* March, 1985, No.84, p.56-62, In Japanese with English summary. 4 refs.
Sano, M.
Ice runways, Airplanes, Safety, Ice breaking, Antarctica—Showa Station.
A small fixed wing aircraft was used in the summer seasons from the First Japanese Antarctic Research Expedition (JARE-1, 1956-57) to JARE-12 (1970-71) at Showa Station. There were fewer than 55 flight hours in each season because of limited operation periods of relief ships in the vicinity of Showa Station. In recent years, one Cessna 185 and one Pilatus PC-6 were operated throughout the year at Showa Station by two pilots and one mechanic, stationing the aircraft for two years at Showa and repatriating one year. The recent total yearly flight time is over 350 hours. Since the aircraft are operated from a sea-ice runway, several problems are experienced such as the deterioration of the runway surface during midsummer, mooring of aircraft, and sea ice breaking. To ensure safe operation, various precautions are taken on flight plan, maintenance of aircraft, weather observations, etc. (Auth.)

39-3606
Wind-tunnel experiments of snowdrift formation behind an elevated building at Syowa Station, Antarctica.
Tomabechi, T., et al, *Antarctic record,* March, 1985, No.84, p.114-119, With Japanese summary. 7 refs.
Endo, A.
Snowdrifts, Simulation, Wind tunnels, Antarctica—Showa Station.
To study snowdrift formation behind elevated buildings, wind-tunnel experiments were carried out, using activated clay particles to simulate snow, on a 1/100 scale model of the observation hut at Showa Station. The similitude of snowdrift for the model and the actual prototype was obtained precisely when the tunnel wind-speed and the wind duration were 5.0 m/s and 2.5 hours, respectively. This modeling technique using activated clay particles is proved to be useful for further studies on the most appropriate shape and dimensions of elevated buildings to prevent snowdrift. (Auth.)

39-3607
Tentative proposal of snow tunnel construction procedure for a subsurface observation station in the Antarctic.
Hannuki, T., et al, *Antarctic record,* March, 1985, No.84, p.120-130, In Japanese with English summary.
Mitsuhashi, H., Sato, T.
Snow tunnels, Snowdrifts, Stations, Cold weather construction, Subsurface structures.
An efficient method of snow tunnel construction is examined in this paper. It consists of the following procedures: net-fences are set up around the construction. The huts are constructed. Snow is controlled to be deposited along the net-fences. The snow deposit will grow thicker along the net-fences. Finally a snow tunnel enveloping the net-fences and the huts will be formed. In order to realize the snowdrift control, preliminary tests on the ability of net-fences to prevent wind and to deposit snow show that the combination of the density ratio of the net and the thickness of the yarn must be devised effectively. (Auth. mod.)

39-3608
Engineering geology of Siberia. [Problemy inzhenernoĭ geologii Sibiri],
Nikolaev, V.A., ed, Novosibirsk, Nauka, 1985, 96p., In Russian. For individual papers see 39-3609 through 39-3624. Refs. passim.
Urban planning, Quaternary deposits, Permafrost beneath structures, Paludification, Municipal engineering, Frozen fines, Loams, Buildings, Slope processes, Loess, Gullies, Foundations, Roads, Railroads.

39-3609
Experimental studies of changes in loess caused by exogenic processes induced by construction. [Eksperimental'nye issledovaniia izmeneniĭ v lessovoĭ tolshche pod vliianiem ekzogennykh protsessov vyzvannykh stroitel'stvom],
Tofaniuk, F.S., Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.4-12, In Russian. 5 refs.
Loess, Frozen fines, Rheology, Paludification, Environmental impact, Drainage, Settlement (structural).

39-3610
Engineering and geological causes of paluded towns in southern West Siberia. [Inzhenerno-geologicheskaia obuslovlennost' podtopleniia gorodskikh territoriĭ iuga Zapadnoĭ Sibiri],
Chernousov, S.I., Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.13-19, In Russian. 4 refs.
Loams, Sands, Urban planning, Paludification, Buildings, Roads.

39-3611
Human impact on activities of geosystems of modern towns. [Vliianie khoziaĭstvennoĭ deiatel'nosti cheloveka na aktivnost' geosistemy sovremennogo goroda],
Shaevich, IA.E., Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.20-23, In Russian. 10 refs.
Urban planning, Permafrost beneath structures, Buildings, Cryogenic soils, Roads, Soil erosion, Gullies, Embankments, Dams, Climatic factors, Microclimatology.

39-3612
Forecasts and the nature of changes in engineering-geological conditions of town areas in western Siberia during construction. [Kharakter i prognoz izmenchivosti inzhenerno-geologicheskikh usloviĭ gorodskikh territoriĭ Zapadnoĭ Sibiri pri zastroĭke],
Rozhdestvenskaia, L.A., et al, Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.24-29, In Russian. 1 ref.
Rogova, N.S., Sulakshina, G.A., Krepsha, N.V.
Municipal engineering, Permafrost beneath structures, Environmental impact, Forests, Steppes.

39-3613
Changes of geological media induced by construction in the town of Barnaul. [Izmenenie geologicheskoĭ sredy v protsesse zastroĭki g. Barnaula],
Aref'ev, V.S., et al, Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.29-31, In Russian. 1 ref.
Gorbunova, T.A., Os'mushkin, V.S.
Urban planning, Municipal engineering, Buildings, Foundations, Settlement (structural), Environmental impact, Soil erosion, Gullies, Landslides.

39-3614
Geological conditions of the city of Omsk. [Geologicheskie usloviia g. Omska],
Barats, N.I., Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.31-34, In Russian. 2 refs.
Hydraulic fill, Municipal engineering, Environmental protection, Earthwork, Foundations, Microrelief, Hydraulic structures, Dams, Gullies, Settlement (structural), Thixotropy, Embankments, Paludification.

39-3615
Changes in engineering and geocryological conditions during construction (exemplified by the town of Chita). [Ob izmenenii inzhenerno-geokriologicheskikh usloviĭ pri zastroĭke territorii (na primere g. Chity)],
Shavrin, L.A., Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.34-37, In Russian. 2 refs.
Earthwork, Municipal engineering, Suprapermafrost ground water, Permafrost beneath structures, Permafrost hydrology, Taliks, Naleds, Soil temperature, Snow cover effect.

39-3616
Geological structure and composition of Quaternary deposits in the Khanty-Mansiysk area. [Geologicheskoe stroenie i sostav chetvertichnykh otlozheniĭ raĭona g. Khanty-Mansiĭska],
Sukhorukova, S.S., Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.37-43, In Russian. 9 refs.
Quaternary deposits, Moraines, Glacial deposits, Lacustrine deposits, Ground ice, Glacial lakes, Permafrost structure, Geological structure.

39-3617
Reliability of grain elevators in areas affected by industry. [Tekhnogenez i nadezhnost' zernokhranilishch],
Potlov, G.G., et al, Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.43-48, In Russian. 3 refs.
Tarasova, L.IA.
Paludification, Industrial buildings, Permafrost hydrology, Storage, Foundations, Settlement (structural).

39-3618
Seasonal changes in moisture content of loesses at the Ob'-In watershed. [Sezonnoe izmenenie vlazhnosti lessovykh gruntov Ob'-Inskogo vodorazdela],
Shevchenko, A.A., et al, Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.49-53, In Russian. 3 refs.
Tarasov, G.P.
Loess, Watersheds, Permafrost beneath rivers, Soil water, Seasonal variations.

39-3619
Influence of physico-mechanical and filtration characteristics of loess on the formation of gullies. [O vliianii fiziko-mekhanicheskikh i fil'tratsionnykh kharakteristik lessovykh otlozheniĭ na ovragoobrazovanie],
Gospodinov, D.G., et al, Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.54-60, In Russian.
Shevchenko, A.A.
Municipal engineering, Swamps, Gullies, Landslides, Solifluction, Loess, Peat, Soil water migration.

39-3620
Formation of gullies in the Novosibirsk area. [Ovragoobrazovanie na territorii g. Novosibirska],
Petrova, N.I., Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.60-69, In Russian. 4 refs.
Soil erosion, Cryogenic soils, Gullies, Valleys, Slope processes, Solifluction, Landslides, Clay soils, Loams, Loess.

39-3621
Sources and factors of paludification of upbuilt areas in the town of Novosibirsk. [Osnovnye istochniki i faktory podtopleniia zastroennykh territoriĭ g. Novosibirska],
Gospodinov, D.G., Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.70-76, In Russian. 3 refs.
Municipal engineering, Paludification, Loess, Sands, Foundations, Underground facilities, Settlement (structural).

39-3622
Changes of physico-mechanical properties of loesslike loams during paludification of construction sites. [Izmenenie fiziko-mekhanicheskikh svoĭstv lessovidnykh suglinkov pri podtoplenii stroitel'nykh ploshchadok],
Khrapov, V.S., Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.76-79, In Russian. 2 refs.
Site surveys, Paludification, Construction, Loess, Loams, Foundations, Piles, Settlement (structural).

39-3623
Paludification of the city of Barnaul and its effect on stability of engineering structures. [O podtoplenii territorii g. Barnaula i ego vliianii na ustoĭchivost' inzhenernykh sooruzheniĭ],
Aref'ev, V.S., et al, Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.79-81, In Russian. 3 refs.
Slobodian, A.D., Aref'eva, V.I.
Municipal engineering, Paludification, Drainage, Foundations, Loess.

39-3624
Protection of grain elevators from industrially polluted ground water. [Zashchita zernovykh elevatorov ot tekhnogennykh gruntovykh vod],
Potlov, G.G., et al, Problemy inzhenernoĭ geologii Sibiri (Engineering geology of Siberia) edited by V.A. Nikolaev, Novosibirsk, Nauka, 1985, p.82-91, In Russian. 10 refs.
Samoĭlova, N.N.
Paludification, Foundations, Loess, Porosity, Earthwork, Drainage, Trenching, Pits (excavations).

39-3625
Ecosystems affected by technology; their organization and functioning. [Tekhnogennye ekosistemy. Organizatsiia i funktsionirovanie],
Titlianova, A.A., ed, Novosibirsk, Nauka, 1985, 136p., In Russian. For selected papers see 39-3626 through 39-3632. Refs. passim.
Slope processes, Soil microbiology, Environmental protection, Algae, Tundra, Forest tundra, Continuous permafrost, Roads, Cryogenic soils, Permafrost hydrology, Mining, Pipelines, Organic soils, Peat, Tailings, Transportation, Swamps, Revegetation.

39-3626
Problems of optimizing Siberian ecosystems affected by technology. [Problemy optimizatsii tekhnogennykh ekosistem Sibiri],
Trofimov, S.S., et al, Tekhnogennye ekosistemy. Organizatsiia i funktsionirovanie (Ecosystems affected by technology; their organization and functioning) edited by A.A. Titlianova, Novosibirsk, Nauka, 1985, p.3-12, In Russian. 2 refs.
Ragim-Zade, F.K.
Mining, Ecosystems, Environmental protection, Cryogenic soils, Plant physiology, Organic soils, Forest tundra, Swamps, Continuous permafrost, Plant ecology, Human factors.

39-3627
Landscape-ecological approach to the optimization of natural complexes affected by technology. [Landshaftno-ekologicheskiĭ podkhod K optimizatsii prirodno-tekhnogennykh kompleksov],
Motorina, L.V., Tekhnogennye ekosistemy. Organizatsiia i funktsionirovanie (Ecosystems affected by technology; their organization and functioning) edited by A.A. Titlianova, Novosibirsk, Nauka, 1985, p.12-23, In Russian. 9 refs.
Earthwork, Construction equipment, Transportation, Soil erosion, Mining, Environmental protection, Construction, Roads, Pipelines, Tailings, Revegetation.

39-3628
Slope processes of areas where ecosystems were affected by technology as a factor in soil formation. [Sklonovye protsessy tekhnogennykh ekosistem kak faktor pochvoobrazovaniia],
Klevenskaia, I.L., et al, Tekhnogennye ekosistemy. Organizatsiia i funktsionirovanie (Ecosystems affected by technology; their organization and functioning) edited by A.A. Titlianova, Novosibirsk, Nauka, 1985, p.23-38, In Russian. 3 refs.
Taranov, S.A., Trofimov, S.S., Fatkulin, F.A.
Tailings, Soil microbiology, Slope processes, Soil erosion, Revegetation, Mining, Slope stability, Cryogenic soils, Solifluction, Plant ecology, Ecosystems.

39-3629
Microbial cenoses in Siberian ecosystems affected by technology. [Mikrobnye tsenozy tekhnogennykh ekosistem Sibiri],
Naplekova, N.N., et al, Tekhnogennye ekosistemy. Organizatsiia i funktsionirovanie (Ecosystems affected by technology; their organization and functioning) edited by A.A. Titlianova, Novosibirsk, Nauka, 1985, p.38-69, In Russian. 15 refs.
Tailings, Earthwork, Slope processes, Cryogenic soils, Soil erosion, Soil microbiology, Mining, Classifications.

39-3630
Role of microbes and zoocenoses in the decomposition of litter in Kuzbass ecosystems affected by technology. [Rol' mikrobo- i zootsenozov v destruktsii opada tekhnogennykh ekosistem Kuzbassa],
Naplekova, N.N., et al, Tekhnogennye ekosistemy. Organizatsiia i funktsionirovanie (Ecosystems affected by technology; their organization and functioning) edited by A.A. Titlianova, Novosibirsk, Nauka, 1985, p.70-85, In Russian. 15 refs.
Stebaeva, S.K., Kandrashin, E.R., Shnaĭder, N.G.
Soil formation, Forest soils, Cryogenic soils, Litter, Soil microbiology, Soil composition, Human factors, Soil pollution.

39-3631
Structure and successions of algal cenoses in recultivated ecosystems of southern Kuzbass. [Struktura i suktsessii al'gotsenozov rekul'tivatsionnykh ekosistem IUzhnogo Kuzbassa],
Shushueva, M.G., Tekhnogennye ekosistemy. Organizatsiia i funktsionirovanie (Ecosystems affected by technology; their organization and functioning) edited by A.A. Titlianova, Novosibirsk, Nauka, 1985, p.85-93, In Russian. 4 refs.
Algae, Tailings, Ecosystems, Soil microbiology, Forest soils, Revegetation, Soil formation, Cryogenic soils, Soil composition, Mining, Plant ecology.

39-3632
Grass cenoses in recultivated forests of southern Kuzbass ecosystems. [Travianistye tsenozy lesnykh rekul'tivatsionnykh ekosistem IUzhnogo Kuzbassa],
Logua, M.T., Tekhnogennye ekosistemy. Organizatsiia i funktsionirovanie (Ecosystems affected by technology; their organization and functioning) edited by A.A. Titlianova, Novosibirsk, Nauka, 1985, p.93-100, In Russian. 8 refs.
Forest soils, Taiga, Alpine landscapes, Grasses, Roots, Plant ecology, Frost resistance.

39-3633
Greenhouse effect and nuclear energy.
Okamoto, K., *Atomic Energy Society of Japan. Journal*, 1984, 26(8), p.671-678, In Japanese with English summary. 16 refs.
Ice melting, Climatic changes, Climatic factors, Air pollution, Sea level, Antarctica—West Antarctica.
Results of recent investigations of the greenhouse effect are reviewed. The temperature rise due to the doubling of CO2 concentration is estimated to be 3.0 deg C. Other trace gases also contribute to the warming significantly. Climatic records of the past century are consistent with the warming hypothesis. Environmental effects of the warming are discussed. The psosible disappearance of upwelling regions in the world oceans is pointed out as is the most serious problem of melting of the polar ice, particularly the disintegration of West Antarctica, which could lead to the submergence of the world coastal regions. It is emphasized that introduction of nuclear energy could prevent this disaster. (Auth.)

39-3634
Historic cartographic evidence for Holocene changes in the antarctic ice cover.
Weihaupt, J.G., *American Geophysical Union. Transactions*, Aug. 28, 1984, 65(35), p.493-501, 34 refs.
Ice cover, Maps, Glaciation, Paleoclimatology, Antarctica.
Ancient maps are dsscribed and illustrated, their potential significance is discussed, and antarctic glaciological evidence and theory are examined for the purpose of demonstrating the consistency or inconsistency of the scientific record with cartographic and historic evidence as recorded in these ancient maps. It is concluded that the geography of the southern continent may have been known in its broad configuration before the mid-16th century.

39-3635
Satellites over Antarctica.
Rycroft, M.J., et al, *American Geophysical Union. Transactions*, Nov. 20, 1984, 65(47), p.1189-1190.
Zwally, J.J.
Ice, LANDSAT.
LANDSAT observations since 1972 are reviewed, describing images over the Antarctic which reveal the blue ice areas and other glaciological features that cannot be seen unless data is subjected to computer enhancement techniques. The usefulness of the images is pointed out, especially for defining the position of the coastal ice margins and icebergs in the ocean. The papers mentioned in this report were presented at the 25th plenary meeting of COSPAR, Graz, Austria, June 25 to July 7, 1984.

39-3636
Global climate system.
World Climate Data Programme. Climate System Monitoring Project, [1985], 52p., Refs. p.49-51.
Sea ice, Snow cover, Climatic factors, Antarctica.
This report represents the first review, under the Climate System Monitoring Project of the World Climate Data Programme, of climatic events during the period 1982-1984. In the sea ice section of this review, the atypical behavior of antarctic sea ice is pointed out, being the longest period of near average sea ice extent in the 11 year record starting in 1973.

39-3637
***USCGC Glacier* Operation Deep Freeze 1982 and 1983 sediment descriptions.**
Kaharoeddin, F.A., et al, *Florida State University. Sedimentology Research Laboratory. Contribution*, Dec. 1984, No.52, 242p., Refs. p.237-239.
Drill core analysis, Bottom sediment, Antarctica—Antarctic Peninsula, Antarctica—Ross Sea.
This volume is a presentation of the descriptions of sediments obtained by coring and grab-sampling in northern Antarctic Peninsula and in the Suizberger Bay area in the Ross Sea aboard *USCGC Glacier*. The data include a discussion of core and grab sample recovery, shipment and handling; tables and maps of station location data for materials retrieved; information concerning age-dates of the piston cores; laboratory procedures and criteria used in the description of the sediments; and lithologic descriptions of the piston and trigger cores, the piston core bagged samples and the bagged grab samples. 159 piston cores were recovered aboard the two cruises.

39-3638
Sea ice morphology and characteristics.
Stringer, W.J., *Glaciological data*, June 1985, GD-17, p.1-28, 7 refs.
Fast ice, Ice formation, Sea ice, Frazil ice, Ice growth, Tensile properties, Ice structure, Ice conditions, Ice physics.

39-3639
Marginal ice zone bibliography.
Brennan, A., comp, *Glaciological data*, June 1985, GD-17, p.29-187.
Sea ice, Acoustics, Bibliographies, Ice air interface, Meteorological factors, Oceanography, Remote sensing.
This bibliography covers several major areas of marginal ice zone research: oceanography, ice, meteorology, remote sensing, and acoustics. Biology is not included. The period of coverage extends from the early twentieth century through 1984. The bibliography is presented in two sections; the first listing is by subject category, the second an alphabetical sort by first author.

39-3640
Energy exchange over antarctic sea ice in the spring.
Andreas, E.L., et al, *Journal of geophysical research*, July 20, 1985, 90(C4), MP 1889, p.7199-7212, Refs. p.7211-7212.
Makshtas, A.P.
Sea ice, Ablation, Radiation balance, Heat flux.
In October and November of 1981, during the U.S.-USSR Weddell Polynya Expedition, we made the first measurements ever of the turbulent and radiative fluxes over the interior pack ice of the southern ocean. The daily averaged, surface-averaged sum of these fluxes—the so-called balance, which comprises the conductive, heat storage, and phase-change terms—was positive for all but one day during the cruise: the ablation season had begun. Variability in the sum of the turbulent fluxes produced most of the variability in the balance. These turbulent fluxes generally correlated with the geostrophic wind—a northerly wind (in off the ocean) transferring heat to the surface, and a southerly wind removing it. (Auth.)

39-3641
Glossary of glaciology. [Gliatsiologicheskiĭ slovar'],
Kotliakov, V.M., et al, Leningrad, Gidrometeoizdat, 1984, 528p., In Russian.
Ice, Snow, Glaciology, Terminology, Dictionaries.
This glossary features substantial articles arranged alphabetically under a wealth of technical terms, names of research organizations, research projects, individual scientists, etc. The text is richly supplemented with tables, diagrams and photographs. The terms are thoroughly cross-referenced. A glossary of local popular terms is added. The bibliography contains references to both Soviet and foreign literature.

39-3642
Antarctic ice.
Radok, U., *Scientific American*, Aug. 1985, 253(2), p.98-105.
Mapping, Ice sheets, Ice physics, Ice composition, Ice mechanics, Sounding.
Studies of the antarctic ice sheet are reviewed, covering its physical and mechanical properties, the radar soundings, the mapping of surface and bottom topography, and the structural and chemical properties of ice. The problem of growing atmospheric concentration of carbon dioxide, as recorded in particles and trace elements incorporated in the ice, is discussed.

39-3643
Problems of the Arctic and the Antarctic: collection of articles, Vol.51.
Treshnikov, A.F., ed, New Delhi, Amerind Publishing Co., 1984, 184p., TT 81-52034, Translation of Problemy Arktiki i Antarktiki; sbornik statei, Vyp.51, 1977. Refs. passim. For selected articles see 39-3644 through 39-3657.
Ice navigation, Sea ice, Ice conditions, Weather forecasting, Ice physics, Meteorological data, Analysis (mathematics), Ice forecasting.

39-3644
Few-parameter numerical model of short-range forecast of the icing conditions of ships.
Tsvetukhin, A.S., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.1-9, TT 81-52034, 13 refs. For Russian original see 32-4469.
Ice navigation, Ship icing, Weather forecasting, Meteorological charts, Air temperature, Wind velocity, Analysis (mathematics).

39-3645
Short-range forecast of zones of ice compression caused by wind drift of ice.
Ivchenko, V.O., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.10-17, TT 81-52034, 8 refs. For Russian original see 32-4470.
Maslovskiĭ, M.I.
Sea ice, Drift, Wind pressure, Ice navigation, Analysis (mathematics), Meteorological factors.

39-3646
Methods of calculating the rearrangement of drift ice.
Maslovskiĭ, M.I., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.18-24, TT 81-52034, 14 refs. For Russian original see 32-4471.
Sea ice, Drift, Ice navigation, Ice cover thickness, Ice density, Analysis (mathematics).

39-3647
Statistical synoptic method of forecasting level oscillations in the southeastern Laptev Sea.
Vanda, IU.A., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.25-32, TT 81-52034, 7 refs. For Russian original see 32-4472.
Sea level, Oscillations, Atmospheric pressure, Maps, USSR—Laptev Sea.

39-3648
Formation of average monthly air temperatures during the period of winter cooling of the sea in the western part of the Arctic.
Ivanov, V.V., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.33-41, TT 81-52034, 11 refs. For Russian original see 32-4473.
Ice navigation, Weather forecasting, Ice conditions, Meteorological charts, Meteorological data, Arctic Ocean.

39-3649
Influence of the glacial extent of the Barents and Kara seas on the air temperature in winter in the western part of the Arctic.
Ivanov, V.V., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.42-50, TT 81-52034, 12 refs. For Russian original see 32-4474.
Air temperature, Ice conditions, Analysis (mathematics), USSR—Kara Sea, Barents Sea.

39-3650
Possibilities of long-range forecast of the state of the Chukchi flaw polynya in spring.
Arikaĭnen, A.I., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.51-56, TT 81-52034, 6 refs. For Russian original see 32-4475.
Ice conditions, Polynyas, Ice forecasting, Chukchi Sea.

39-3651
Year-to-year variability of the glacial extent of the Gulf of Anadyr in spring.
Arikaĭnen, A.I., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.57-67, TT 81-52034, 17 refs. For Russian original see 32-4476.
Ice navigation, Ice conditions, Ice forecasting, Drift, Meteorological charts, Meteorological data, USSR—Anadyr Bay.

39-3652
Consideration of advection in numerical methods of ice calculations.
Appel', I.L., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.68-72, TT 81-52034, 8 refs. For Russian original see 32-4477.
Frolov, I.E.
Sea ice, Drift, Ice conditions, Ice forecasting, Analysis (mathematics).

39-3653
Determination of the tangential stress acting on an ice cover.
Appel', I.L., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.73-77, TT 81-52034, 8 refs. For Russian original see 32-4478.
Sea ice, Drift, Ice cover, Wind pressure, Mathematical models.

39-3654
Calculations of large-scale circulation of waters in the Arctic Basin from a diagnostic model.
Ponomarev, V.I., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.78-91, TT 81-52034, 12 refs. For Russian original see 32-4479.
Ocean currents, Mathematical models, Charts, Arctic Ocean.

39-3655
Large-scale scheme of Arctic Basin currents from the data on the "Sever-25" hydrologic polygon.
Benzeman, V.IU., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.92-101, TT 81-52034, 12 refs. For Russian original see 32-4480.
Water transport, Ocean currents, Mathematical models, Statistical analysis, Charts, Arctic Ocean.

39-3656
Peculiarities of heat exchange between the atmosphere and ocean in the Arctic Basin.
Makshtas, A.P., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.102-108, TT 81-52034, 18 refs. For Russian original see 32-4481.
Air water interactions, Heat transfer, Drift stations, Ice conditions, Ice surveys, Arctic Ocean.

39-3657
Portable echosounder "SKAT".
Kovchin, I.S., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.51, p.160-165, TT 81-52034, 2 refs. For Russian original see 32-4482.
Timrot, G.D.
Drift stations, Measuring instruments, Depth finders, Design, Arctic Ocean.

39-3658
Problems of the Arctic and the Antarctic; collection of articles, Vol.56.
Treshnikov, A.F., ed, New Delhi, Amerind Publishing Co., 1985, 159p., TT 82-00-102, Translation of Problemy Arktiki i Antarktiki; sbornik statei Vyp.56, 1981. Refs. passim. For individual articles see 39-3659 through 39-3666.
Oceanography, Sea ice, Fast ice.

39-3659
Subsurface currents in the Arctic Ocean.
Beliakov, L.N., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.56, p.9-18, TT 82-00-102, 16 refs. For Russian original see 36-1966.
Volkov, V.A.
Ocean currents, Drift stations.

39-3660
Conditions of regelation of sea ice in the Arctic.
Gorbunov, IU.A., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.56, p.23-31, TT 82-00-102, 2 refs. For Russian original see 36-1967.
Petrov, I.G.
Sea ice, Regelation, Ice temperature, Ice density, Water temperature, Freezing.

39-3661
Thermal displacements, deformations and stresses in fast ice.
Kulakov, M.IU., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.56, p.32-46, TT 82-00-102, 10 refs. For Russian original see 36-1968.
Legen'kov, A.P.
Fast ice, Thermal stresses, Strains, Ice deformation.

39-3662
Rheological model of hummocking of ice cover.
Kolesov, S.A., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.56, p.47-55, TT 82-00-102, 12 refs. For Russian original see 36-1969.
Pressure ridges, Rheology, Mathematical models, Sea ice, Fast ice.

39-3663
Some morphological peculiarities of the lower and upper surfaces of fast ice.
Chilingarov, A.N., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.56, p.56-61, TT 82-00-102, For Russian original see 36-1970.
Kadachigov, G.A.
Fast ice, Pressure ridges, Ice surface, Ice bottom surface, Ice water interface, Ice cover thickness.

39-3664
Technique of measurement of ice cover thickness in the Ob'-Taz inlet.
Klimovich, V.M., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.56, p.62-66, TT 82-00-102, 3 refs. For Russian original see 36-1971.
Chilingarov, A.N.
Sea ice, Ice cover thickness.

39-3665
Interrelationship of seasonal pressure variations in high latitudes of the northern and southern hemispheres.
Lutsenko, E.I., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.56, p.96-102, TT 82-00-102, 11 refs. For Russian original see 36-1972 or 121-25802.
Synoptic meteorology, Atmospheric pressure.
Analysis of semiannual changes in 500-mb geopotential shows that in the mid-troposphere as at sea level maximum amplitude peaks of six-month variations occur in the same regions of the northern and southern hemispheres. Thus it appears that localization of maximum amplitude areas in the conjugate areas of the Laptev Sea and east Antarctica is the characteristic feature of semiannual wave formation at both levels of the atmosphere. Comparison of maps of 6-month pressure variations with geomagnetic activity maps shows that areas of maximum amplitude correspond to conjugate zones of greatest geomagnetic activity.

39-3666
Variability of depth of occurrence and temperature of Pacific waters.
Blinov, N.I., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.56, p.135-141, TT 82-00-102, 9 refs. For Russian original see 36-1973.
Vorob'ev, V.N.
Ocean currents, Oceanography, Drift stations.

39-3667
Problems of the Arctic and the Antarctic; collection of articles, Vol.57.
Treshnikov, A.F., ed, New Delhi, Amerind Publishing Co., 1984, 142p., TT 82-00-104, Translation of Problemy Arktiki i Antarktiki; sbornik statei, Vyp.57, 1977. Refs. passim. For selected articles see 39-3668 through 39-3672.
Ice navigation, Sea ice, Oceanography, Hydrography.

39-3668
Main stages and prospects of study of the polar regions of the earth.
Treshnikov, A.F., *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.57, p.1-19, TT 82-00-104, For Russian original see 36-1984 or 12A-25828.
Research projects.
Soviet polar research is reviewed. In 1956 Soviet antarctic research began and in 1958 the AANII took over responsibility for antarctic and southern ocean investigations. A concise summary of results of research in glaciology, oceanography, meteorology, medicine and other fields is given.

39-3669
Problems of investigating sea ice.
Gudkovich, Z.M., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.57, p.57-65, TT 82-00-104, For Russian original see 36-1985.
Zakharov, V.F., Kirillov, A.A., Krutskikh, B.A.
Sea ice, Research projects, Ice forecasting.

39-3670
Problems of large-scale ocean-atmosphere interaction.
Nikolaev, IU.V., et al, *Problems of the Arctic and the Antarctic; collection of articles,* 1984, Vol.57, p.66-70, TT 82-00-104, For Russian original see 36-1986.
Smirnov, N.P.
Air water interactions, Climatology, Sea ice, Research projects, Heat balance.

39-3671
Current methods and results of investigations of the physics of ice and the ocean.
Bogorodskii, V.V., *Problems of the Arctic and the Antarctic; collection of articles*, 1984, Vol.57, p.71-86, TT 82-00-104, 6 refs. For Russian original see 36-1987 or 12F-25830.
Ice physics, Ice cover thickness, Sea ice, Rheology, Radar.
Radar and radio methods and their use in measuring ice thickness and flow velocity, internal structure of glaciers and sea surface temperature in the Arctic are discussed. Results of new techniques for studying drifting ice dynamics are evaluated. Assessments are also given of results of water and snow-ice optics in the Arctic Basin and of new findings on micro- and mesoscale space-time variability in geophysical fields. A new pressure measuring method for determining rheological characteristics of ice is evaluated.

39-3672
Iceworthiness of icebreakers and transport ships for navigation in ice.
Maksutov, D.D., *Problems of the Arctic and the Antarctic; collection of articles*, 1984, Vol.57, p.131-135, TT 82-00-104, For Russian original see 36-1988.
Icebreakers, Ships.

39-3673
Arctic underwater operations. Medical and operational aspects of diving activities in arctic conditions.
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Subglacial navigation, Submarines, Ice conditions, Meetings, Rescue operations, Offshore structures, Marine transportation, Diving, Arctic Ocean.

39-3674
Arctic operations.
Goodfellow, R., Arctic underwater operations. Medical and operational aspects of diving activities in arctic conditions. Edited by L. Rey, London, Graham and Trotman, Ltd., 1985, p.271-282.
Ice conditions, Offshore structures, Offshore drilling, Artificial islands, Sea ice distribution, Caissons, Hydrocarbons, Exploration, Beaufort Sea.

39-3675
Ice conditions in the Arctic.
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Ice conditions, Sea ice distribution, Offshore structures, Ice loads, Artificial islands, Ice crystal structure, Seasonal variations, Caissons, Ice scoring, Arctic Ocean.

39-3676
Development and operation of ROVs.
Talkington, H.R., Arctic underwater operations. Medical and operational aspects of diving activities in arctic conditions. Edited by L. Rey, London, Graham and Trotman, Ltd., 1985, p.297-304.
Vehicles, Subglacial navigation, Rescue operations, Remote control, Underwater operations.

39-3677
One-man submersibles.
Boulton, S.B., Arctic underwater operations. Medical and operational aspects of diving activities in arctic conditions. Edited by L. Rey, London, Graham and Trotman, Ltd., 1985, p.305-310.
Offshore drilling, Freezeup, Equipment, Ice conditions, Countermeasures, Sea ice, Diving.

39-3678
Submarine navigation.
Harris, M.G.T., Arctic underwater operations. Medical and operational aspects of diving activities in arctic conditions. Edited by L. Rey, London, Graham and Trotman, Ltd., 1985, p.311-320.
Subglacial navigation, Submarines, Polynyas.

39-3679
Underwater navigation and positioning systems.
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Subglacial navigation, Remote sensing, Underwater acoustics.

39-3680
Development of a submarine freighter.
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Abels, F.
Subglacial navigation, Marine transportation, Tanker ships, Petroleum industry, Submarines, Water temperature, Unloading.

39-3681
Ice conductivity restraints on the inductive theory of thunderstorm electrification.
Illingworth, A.J., et al, *Journal of geophysical research*, June 30, 1985, 90(D4), p.6033-6039, 24 refs.
Caranti, J.M.
Ice electrical properties, Charge transfer, Electrical resistivity, Thunderstorms, Electric fields, Ice physics, Falling bodies, Polarization (charge separation), Experimentation.

39-3682
Charging of ice by differences in contact potential.
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Illingworth, A.J., Marsh, S.J.
Ice electrical properties, Charge transfer, Ice solid interface, Thunderstorms, Metals, Experimentation.

39-3683
Ice crystal interactions with a riming target: charge transfer and collection efficiencies.
Saunders, C.P.R., et al, *Journal of geophysical research*, June 30, 1985, 90(D4), p.6047-6050, 12 refs.
Wheeler, M.F.S., Jallo, N., Jayaratne, E.R.
Ice crystals, Charge transfer, Ice electrical properties, Unfrozen water content, Temperature effects, Experimentation, Hailstone electrification.

39-3684
Temporal and spatial variation of snow pressure on structures.
Larsen, J.O., et al, *Canadian geotechnical journal*, May 1985, 22(2), p.166-171, With French summary, 6 refs.
McClung, D.M., Hansen, S.B.
Snow loads, Structures, Slope orientation, Snow density, Snow depth, Time factor, Mountains.

39-3685
Punch indentation of polycrystalline ice.
Sego, D.C., et al, *Canadian geotechnical journal*, May 1985, 22(2), p.226-233, With French summary, 18 refs.
Morgenstern, N.R.
Frozen ground mechanics, Permafrost beneath structures, Flow rate, Soil creep, Ground ice, Ice crystal structure, Stresses, Settlement (structural), Temperature effects.

39-3686
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Sadov, A.V., et al, Moscow, Nedra, 1985, 144p., In Russian with abridged English table of contents enclosed. 50 refs.
Burleshin, M.I., Viktorov, A.S.
Spaceborne photography, Photointerpretation, Mapping, Ground water, Artesian water, Deserts, Mountains, River basins, Tundra, Swamps, Water storage, Water reserves.

39-3687
Technical design of core drilling. [Tekhnicheskoe proektirovanie kolonkovogo bureniia].
Mikhailova, N.D., Moscow, Nedra, 1985, 200p., In Russian with abridged English table of contents enclosed. 46 refs.
Coring, Drilling fluids, Core samplers, Rotary drilling, Drilling, Permafrost, Temperature distribution.

39-3688
Geotechnical properties of samples from borings obtained in the Chukchi Sea, Alaska.
Winters, W.J., et al, *U.S. Geological Survey. Open-file report*, Dec. 1984, No.85-23, 55p., 14 refs.
Lee, H.J.
Offshore drilling, Soil physics, Bottom sediment, Boreholes, Ocean bottom, Settlement (structural), Chukchi Sea.

39-3689
Crystallographic orientation of the recrystallized grain grown in the deformed single crystal of ice.
Ohtomo, M., *Hokkaido University, Sapporo, Japan. Institute of Low Temperature Science. Contribution Series A*, 1984, No.34, 21p., 38 refs.
Ice crystal structure, Ice crystal growth, Recrystallization, Temperature effects.

39-3690
Viscoelastic approach to the ice load evaluation.
Kajaste-Rudnitski, J., et al, *Finland. Technical Research Centre. Research reports*, May 1985, No.351, 23p. + appends., 7 refs.
Sackinger, W.M.
Ice loads, Artificial islands, Offshore structures, Viscoelastic materials, Strains, Stresses, Ice solid interface, Rheology, Mathematical models.

39-3691
Summer season along the east coast of Hudson Bay during the nineteenth century. Part 3: Summer thermal and wetness indices. A. Meteorology.
Wilson, C.V., *Canada. Atmospheric Environment Service. Canadian Climate Centre. Report*, 1985, No.85-3, 38p. + figs., Refs. p.35-38. With French summary.
Meteorological data, River ice, Freezeup, Ice breakup, Snowfall, Snow cover, Vegetation, Periodic variations, Statistical analysis, Canada—Hudson Bay.

39-3692
Theoretical bases of engineering geology. Physicochemical bases. [Teoreticheskie osnovy inzhenernoi geologii. Fiziko-khimicheskie osnovy].
Sergeev, E.M., ed, Moscow, Nedra, 1985, 288p., In Russian with abridged English table of contents enclosed. 40 refs.
Taiga, Clay soils, Underground storage, Frozen fines, Liquefied gases, Soil freezing, Frost penetration, Cryogenic structures, Heat transfer, Hydrothermal processes, Soil chemistry.

39-3693
Design and protection of industrial buildings under special conditions. [Proektirovanie i zashchita proizvodstvennykh zdanii v osobykh usloviiakh].
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Karst, Industrial buildings, Fines, Foundations, Thixotropy, Settlement (structural).

39-3694
Modern periglacial process in the central part of Tian Shan.
Ji, Z., *Journal of glaciology and cryopedology*, July 1980, 2(3), p.1-11, 5 refs., In Chinese with English summary.
Periglacial processes, Frost weathering, Freeze thaw cycles, Cirques, Frost heave, Climatic factors, Snow line, Mountains, China—Tian Shan.

39-3695
Recent variations of the Insukaiti glacier and adjacent glacier in the Karakoram Mountains.
Zhang, X., *Journal of glaciology and cryopedology*, July 1980, 2(3), p.12-16, 5 refs., In Chinese with English summary.
Glacier oscillation, Mountain glaciers, Glacial deposits, Glacier flow, Flow rate, China—Karakoram Mountains.

39-3696
On engineering geological survey in alpine permafrost regions of West China.
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Permafrost distribution, Engineering geology, Alpine glaciation, Geological surveys, China.

39-3697
Influence of grain-size constituent on frost heave in fine sand.
Wang, Z., *Journal of glaciology and cryopedology*, July 1980, 2(3), p.24-28, 5 refs., In Chinese with English summary.
Frost heave, Experimentation, Grain size, Water content, Sands, Clays, Fines, Statistical analysis.

39-3698
Measurement on variation of glacial surface by repeated terrestrial stereophotographic method.
Chen, J., *Journal of glaciology and cryopedology*, July 1980, 2(3), p.29-36, 3 refs., In Chinese with English summary.
Glacier surfaces, Glacier oscillation, Stereophotography, Glacier surveys, Variations, China—Batura Glacier.

39-3699
Experiment on radio-echo sounding of a mountain glacier.
Huang, Y., et al, *Journal of glaciology and cryopedology*, July 1980, 2(3), p.37-39, In Chinese with English summary.
Gu, Z., Wan, T., Gao, Y.
Mountain glaciers, Radio echo soundings, Remote sensing, Glacier thickness, Glacier surveys.

39-3700
Experimental research of frost heave under different level of groundwater in various soils.
Wang, S., *Journal of glaciology and cryopedology*, July 1980, 2(3), p.40-45, In Chinese with English summary.
Frost heave, Ground water, Water level, Experimentation, Soil temperature.

39-3701
Thermal state and stability of *tunnel* in Tumengela coalmine, Xizang.
Li, S., et al, *Journal of glaciology and cryopedology*, July 1980, 2(3), p.46-50, 2 refs., In Chinese with English summary.
Guo, D.
Freeze thaw cycles, Thermal regime, Tunnels, Active layer, Frozen ground physics, Ground water, Water content, Seasonal variations, Temperature variations, Stability, Mining.

39-3702
Protecting foundations of buildings and structures from adverse effects of ground water. [Zashchita osnovanii zdanii i sooruzhenii ot vozdeĭstviia podzemnykh vod],
Degtiarev, B.M., et al, Moscow, Stroĭizdat, 1985, 264p., In Russian with abridged English table of contents enclosed. 52 refs.
Dzektser, E.S., Muftakhov, A.Zh.
Buildings, Ground water, Foundations, Underground facilities, Underground storage, Soil strength, Settlement (structural), Drainage.

39-3703
Proceedings, vols.1-3.
International Symposium on Remote sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984, Ann Arbor, Environmental Research Institute of Michigan, [1985], 2000p. (3 vols.), Refs. passim. For selected papers see 39-3704 through 39-3714.
Snow cover, Remote sensing, Radiometry, Microwaves, Ice cover, Snow physics, Albedo, Mapping, Meetings.

39-3704
Evaluation of MOS-1 microwave scanning radiometer (MSR) data in field experiments.
Arai, K., et al, International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.435-444, 4 refs.
Snow cover, Remote sensing, Microwaves, Radiometry, Snow depth, Snow physics, Wind velocity, Water vapor.

39-3705
High relief terrain classification using digital elevation model variables and Landsat MSS data in the Yukon Territory, Canada.
Franklin, S.E., et al, International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.603-611, 7 refs.
LeDrew, E.F.
Terrain identification, Remote sensing, Geomorphology, Classifications, LANDSAT, Landscape types, Mapping, Canada—Yukon Territory.

39-3706
Application of multisensor observations to Great Lakes hydrologic forecast models.
Gauthier, R.L., et al, International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.1129-1140, 18 refs.
Melloh, R.A., Croley, T.E., II, Hartmann, H.C.
Snow cover, Lake water, Hydrology, Water level, Snow water equivalent, Forecasting, Soil water, Water supply, Models, Vegetation, Great Lakes.

39-3707
Use of remote sensing for the U.S. Army Corps of Engineers dredging program.
McKim, H.L., et al, MP 1890, International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.1141-1150, Refs. p.1147-1149.
Klemas, V., Gatto, L.W., Merry, C.J.
Remote sensing, Dredging, Sediment transport, Channels (waterways), Suspended sediments, Environmental impact.
The objectives of this study were to review the uses of existing remote sensing techniques for providing data in the Corps of Engineers dredging program, to define promising new techniques for minotoring dredging operations, and to recommend those techniques that should be used now and those to be developed for future use. The uses for which remote sensing techniques were evaluated include: channel surveys and engineering considerations, monitoring of sediment drift and dispersion during dredging operations, monitoring of water quality and suspended sediment concentration, disposal site selection and minitoring of environmental effects at disposal sites, and long-range dredged material disposal management strategies.

39-3708
Satellite microwave radiometry of snow cover.
Hallikainen, M., International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.1404-1414, 14 refs.
Snow cover, Remote sensing, Snow electrical properties, Radiometry, Snow water equivalent, Light scattering, Dielectric properties, Soil physics, Microwaves, Brightness.

39-3709
Evaluation of the satellite derived snow cover area-runoff forecasting models for the inaccessible basins of Western Himalayas.
Dey, B., International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.1425-1432, 13 refs.
Snow cover distribution, Runoff forecasting, Remote sensing, River flow, Models, Seasonal variations, Himalaya Mountains.

39-3710
Visible and infrared sea ice mapping from satellites.
Wannamaker, B., et al, International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.1671-1675, 9 refs.
Condal, A., Le, H.
Sea ice distribution, Remote sensing, Albedo, Mapping, Infrared mapping.

39-3711
Airborne measurements of freshwater ice albedos.
Leshkevich, G.A., et al, International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.1677-1687, 8 refs.
Reid, N.J.
Ice optics, Albedo, Radiometry, Airborne equipment.

39-3712
Effect of antarctic ice crystals and aerosols on the polarimetry and photometry of the antarctic sky.
Egan, W.G., International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.1845-1854, 26 refs.
Ice crystals, Supercooled clouds, Spectra, Aerosols, Remote sensing, Radiation, Photometry, Polarization (waves), Models, Scattering.
This paper represents a progress report on the applicability of the Dave spectral polarimetric and photometric atmospheric model to the Antarctic summer sky containing ice clouds. Although the model is based on plane parallel layers, it was found to be valid in predicting the photometry and polarimetry between 0.400 and 1.0 micron within a factor of approximately two. Additional observations were made at 0.36 micron and to 1.6 micron wavelengths. Radiosonde observations were used as supplementary input data for ice cloud location. The Mie scattering calculations assumed spheres of diameters between 0.458 and 45.8 micron as approximating the scattering properties of ice crystals; comparisons to the phase function of columnlike hexagonal prisms showed the assumption to be reasonable. The observed optical depths are strongly dependent on the acceptance angle of the sun photometer because of the strong solar aureole. However, the amount of precipitable water may be accurately determined with a 2 degree FOV photometer using the ratio of two wavelengths, one strongly absorbing band for H2O and the other transmitting

39-3713
Influence of snow cover recession on an alpine ecological system.
Keller, M., et al, International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.1931-1936, 7 refs.
Seidel, K.
Ecology, Snow cover effect, Snow cover distribution, Remote sensing, Mountains, Mapping, LANDSAT, Vegetation, Switzerland—Davos.

39-3714
Observation and study of ice edge eddy dynamics in the East Greenland Current as seen from satellite.
Cowan, A.M., et al, International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Ann Arbor, Environmental Research Institute of Michigan, [1985], p.1945-1954, 12 refs.
Ulbricht, K.A.
Ice edge, Ocean currents, Remote sensing, Ice cover distribution, Dynamic properties, Greenland Sea.

39-3715
Arctic research needs in civil engineering.
Haneman, V., ed, *Alaska. University. School of Engineering. Report*, Apr. 1985, EES-1, 199p.
Carlson, R., ed.
Permafrost distribution, Engineering, Ice conditions, Waste treatment, Environmental impact, Water supply, Ice loads, Offshore structures, Research projects, Icing, Oil spills, Mapping.

39-3716
Natural ice in relation to skating. [Natuurijs in relatie tot de schaatssport],
Kroes, H., Bozum, Oct. 1982, 23p., In Dutch. 15 refs. Unpublished manuscript.
Ice strength, Ice formation, Bearing strength, Snow cover effect, Temperature variations, Water temperature.

39-3717
Snow-melting system, 9th Street and I 64, Louisville.
Azevedo, W.V., *Kentucky. University. Kentucky Transportation Research Program. Report*, Sep. 1982, UKTRP-82-14, 31p., 4 refs.
Snow removal, Ice removal, Electric heating, Snow melting, Artificial melting, Road icing, Road maintenance, Winter maintenance, Ice melting.

39-3718
Characteristics of the heat balance of the Greenland ice sheet for modelling.
Ambach, W., *Journal of glaciology*, 1985, 31(107), p.3-12, 19 refs., With French and German summaries.
Glacier heat balance, Ice sheets, Glacier ablation, Climatic changes, Mathematical models, Heat flux, Radiation balance, Heat transfer, Greenland.

39-3719
Measured re-advance of a debris-covered glacier terminus in the President Range, Yoho National Park, British Columbia, Canada.
Rogerson, R.J., *Journal of glaciology*, 1985, 31(107), p.13-17, 13 refs., With French and German summaries.
Glacier oscillation, Glacier flow, Moraines, Mountain glaciers, Talus, Climatic factors, Canada—British Columbia—Emerald Glacier.

39-3720
Snow profiles and avalanche activity in the Cairngorm Mountains, Scotland.
Ward, R.G.W., et al, *Journal of glaciology*, 1985, 31(107), p.18-27, 15 refs., With French and German summaries.
Langmuir, E.D.G., Beattie, B.
Avalanche formation, Snow cover distribution, Snow density, Snow temperature, Profiles, Mountains, Grain size, Snow physics, United Kingdom—Cairngorm Mountains.

39-3721
Radiometric chronology of Changme-Khangpu glacier, Sikkim.
Nijampurkar, V.N., et al, *Journal of glaciology*, 1985, 31(107), p.28-33, 17 refs., With French and German summaries.
Bhandari, N., Borole, D.V., Bhattacharya, U.
Mountain glaciers, Radiometry, Glacier flow, Isotope analysis, Glacier oscillation, Ice surfaces, Geomorphology, India—Changme-Khangpu Glacier.

39-3722
Re-assessment of the mass balance of the Lambert Glacier drainage basin, Antarctica.
McIntyre, N.F., *Journal of glaciology*, 1985, 31(107), p.34-38, Refs. p.37-38., With French and German summaries.
Mass flow, Glacier surfaces, Glacier mass balance, Subsurface drainage.
Re-definition of the interior drainage basin of Lambert Glacier, using the most recent sources of ice-surface elevations, has shown its area to be 902,000 sq km, that is, 17% less than previous estimates. Landsat imagery of the steepest sloping part of the basin shows there is bare ice over an area of 56,000 sq km. Other evidence also indicates exceptionally low mass inputs and the distribution of accumulation rates has been updated. The result is a positive mass balance for the interior basin (+2 Gt/a) and error limits which fall below zero. This is 47% less than the most recent calculation and illustrates the difficulty in deriving mass budgets in regions where data are scarce. (Auth.)

39-3723
Thermal convection in ice sheets: we look but do not see.
Hughes, T., *Journal of glaciology*, 1985, 31(107), p.39-48, Refs. p.47-48., With French and German summaries.
Sounding, Ice creep, Convection, Stratigraphy, Ice thermal properties, Ice sheets, Ice density.
Thermal convection in the antarctic and Greenland ice sheets has been dismissed on the grounds that radio-echo stratigraphy is undisturbed for long distances. However, the undisturbed stratigraphy lies, for the most part, above the density inversion in polar ice sheets and therefore does not disprove convection. A generalized Rayleigh criterion for thermal convection in elastic-viscoplastic polycrystalline solids heated from below is developed and applied to ice-sheet convection. An infinite Rayleigh number at the onset of primary creep decreases with time and becomes constant when secondary creep dominates, suggesting that any thermal buoyancy stress can initiate convection but convection cannot be sustained below a buoyancy stress of about 3kPa. An analysis of the temperature profile down the Byrd Station core hole suggests that about 1000 m of ice below the density inversion will sustain convection. Creep along the Byrd Station strain network, radar sounding in East Antarctica, and seismic sounding in West Antarctica are examined for evidence of convective creep superimposed on advective creep. It is concluded that the evidence for convection is there. (Auth.)

39-3724
Apparent short-term glacier velocity variations.
Andreasen, J.-O., *Journal of glaciology*, 1985, 31(107), p.49-53, 16 refs., With French and German summaries.
Glacier flow, Glacier surfaces, Glacial hydrology, Flow rate, Velocity, Diurnal variations.

39-3725
Optimal measurement of ice-sheet deformation from surface-marker arrays.
MacAyeal, D.R., *Journal of glaciology*, 1985, 31(107), p.54-59, 11 refs., With French and German summaries.
Ice surveys, Ice deformation, Ice creep, Ice shelves, Strain tests, Antarctica—Ross Ice Shelf.
Surface strain-rate is best observed by fitting a strain-rate ellipsoid to the measured movement of a stake network, or other collection of surface features using a least-squares procedure. Ice shelf data shows that reasonably accurate measurements can be obtained from 12 stakes after only four days of deformation. The least-squares procedure may also aid airborne photogrammetric surveys in that reducing the time interval between survey and re-survey could permit better surface-feature recognition. (Auth. mod.)

39-3726
Superplasticity owing to grain growth in polar ices.
Duval, P., et al, *Journal of glaciology*, 1985, 31(107), p.60-62, 16 refs., With French and German summaries.
Lliboutry, L.
Ice deformation, Ice crystal growth, Grain size.
Deep coring in polar ice sheets has only located the well-known recrystallized ice with a fabric peculiar to tertiary dislocation creep in bottom layers. At lesser depths, anisotropic ice with steady grain-sizes is found; secondary dislocation creep is the dominant process and an anisotropic third-power relation viscosity should ensue. In this paper, ices from the surface down to several hundred meters in depth are considered. Their grain-size increases with time owing to free energy at grain boundaries. This continuous boundary migration appears to be a much more efficient process for relative displacements of the grains than boundary sliding accommodated by diffusional processes between grains of constant size. Locally heterogeneous superplastic deformation leading to moderate viscosities is therefore expected. This deformation mechanism can explain the field data which seem to show a viscosity more than one order of magnitude lower than would result from Nabarro-Herring creep or secondary dislocation creep. (Auth.)

39-3727
Air-cushion vehicles for landing operations. [Desantnye sredstva na vozdushnoĭ podushke]
Lapkovskiĭ, P., et al, *Tekhnika i vooruzhenie*, Feb. 1985, No.2, p.40-41, In Russian.
Dotsenko, V.
Military operation, Military transportation, Air cushion vehicles, Ships, All terrain vehicles.

39-3728
Rare bog plants in the northwestern RSFSR and the organization of their protection. [Redkie rasteniia bolot severo-zapada RSFSR i organizatsiia ikh okhrany]
Boch, M.S., *Botanicheskiĭ zhurnal*, 1985, 70(5), p.688-697, In Russian. 21 refs.
Swamps, Environmental protection, Vegetation, Subarctic landscapes, Plant ecology, Ecosystems.

39-3729
Moisture effect on nitrogen fixation and denitrification processes in peat bog soils. [Vliianie vlazhnosti na azotfiksiruiushchuiu i denitrifitsiruiushchuiu aktivnost' torfianoĭ bolotnoĭ pochvy]
Bursakov, S.A., et al, *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie*, Apr.-June 1985, No.2, p.50-54, In Russian with English summary. 16 refs.
Umarov, M.M., Pushkareva, T.V.
Organic soils, Nutrient cycle, Paludification, Peat, Swamps.

39-3730
In the snows of polar regions. [V snegakh Zapoliar'ia]
Vasil'ev, V., *Tyl i snabzhenie sovetskikh vooruzhennykh sil*, Apr. 1984, p.53-56, In Russian.
Alpine tundra, Military operation, Military facilities, Military transportation, Logistics, Tracked vehicles.

39-3731
Snow can also warm. [I sneg greet]
Vasil'ev, V., *Tyl i snabzhenie sovetskikh vooruzhennykh sil*, Nov. 1984, No.11, p.63-64, In Russian.
Snow houses, Snowstorms, Military operation, Polar regions.

39-3732
Allowing for peculiarities of the North. [S uchetom osobennosteĭ Severa]
Bobkov, M., *Tyl i snabzhenie sovetskikh vooruzhennykh sil*, Sep. 1984, No.9, p.43-46, In Russian.
Military operation, Logistics, Telecommunication, Military transportation, Polar regions.

39-3733
Chemical admixture for concretes. [Khimicheskaia dobavka k betonu]
Osatskiĭ, L.G., et al, *Stroitel'nye materialy i konstruktsii*, July-Sep. 1984, No.3, p.19-20, In Russian.
Goncharov, IU.A., Khusnutdinova, A.I., Maraeva, V.V.
Winter concreting, Concrete admixtures, Concrete freezing, Concrete strength, Cements, Frost resistance, Wastes.

39-3734
Frost resistance problem of ceramic bricks and its solution. [Problema ekspluatatsionnoĭ morozostoĭkosti keramicheskogo kirpicha i real'nye puti ee resheniia]
Sadunas, A.S., et al, *Stroitel'nye materialy*, Sep. 1984, No.9, p.25-26, In Russian. 3 refs.
Machiulaĭtis, R.V., Kaminskas, A.IU.
Bricks, Ceramics, Frost resistance, Walls, Snow cover effect.

39-3735
Construction problems in Siberia. [O problemakh gradostroite'stva v Sibiri]
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Large panel buildings, Municipal engineering, Permafrost beneath structures, Forest soils, Taiga.

39-3736
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Zhukov, N.V.
Houses, Concrete piles, Foundations, Frost heave, Frost penetration, Soil freezing, Thermal insulation.

39-3737
Assembly of large-panel buildings in freezing weather. [Montazh panel'nykh zdaniĭ pri nizkikh temperaturakh]
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Grouting, Large panel buildings, Winter concreting, Mortars, Prefabrication, Panels, Joints (junctions).

39-3738
Improving the range of block sections for residential houses in the Far North. [O sovershenstvovanii nomenklatury blok-sektsiĭ dlia zhilykh domov na Kraĭnem Severe]
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Reinforced concretes, Prefabrication, Residential buildings, Modular construction, Permafrost beneath structures.

39-3739
Increasing the reliability of Series 1-164 large panel buildings with longitudinal bearing walls. [Povyshenie nadezhnosti krupnopanel'nykh zdaniĭ serii 1-164 s prodol'nymi nesushchimi stenami]
Barkov, IU.V., et al, *Zhilishchnoe stroitel'stvo*, Nov. 1984, No.11, p.5-7, In Russian. 2 refs.
Large panel buildings, Prefabrication, Panels, Joints (junctions), Grouting, Mortars, Winter concreting, Freeze thaw cycles.

39-3740
Determination of trafficability indices of deformed peat deposits for the DT-75B tractor. [Opredelenie pokazateleĭ prokhodimosti traktora DT-75B po pererabotannoĭ torfianoĭ zalezhi]
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Swamps, Peat, Soil trafficability, Tracked vehicles, Tractors.

39-3741
Kinematic studies of a walking swamp vehicle and evaluation of the smoothness of its progress. [Kinematicheskie issledovaniia shagaiushchego bolotokhoda i otsenka plavnosti ego khoda]
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Korovitsyn, L.F.
Swamps, All terrain vehicles.

39-3742
Strength of drained peat deposits. [Prochnostnye svoĭstva osushennykh torfianykh zalezheĭ]
Surovov, V.I., *Torfianaia promyshlennost'*, Oct. 1984, No.10, p.18-20, In Russian. 4 refs.
Swamps, Peat, Drainage, Soil stabilization, Organic soils, Soil strength.

39-3743
Pathways of photosynthetic carbon assimilation in sea-ice microalgae from McMurdo Sound, Antarctica.
Palmisano, A.C., et al, *Limnology and oceanography*, May 1985, 30(3), p.674-678, Refs. p.677-678.
Sullivan, C.W.
Algae, Photosynthesis, Cryobiology, Sea ice, Antarctica—McMurdo Sound.
Although sea-ice microalgae share a low temperature ice-associated environment, their patterns of C-14 assimilation into proteins, polysaccharides, lipids, and small molecular weight metabolites suggest that the physiological ecology of surface, bottom congelation, and platelet ice communities should be considered separately. (Auth.)

39-3744
Ecological aspects of vertical differentiation of vegetational cover in boreal highlands. [Ekologicheskie aspekty vertikal'noĭ differentsiatsii rastitel'nogo pokrova v boreal'nykh vysokogor'iakh]
Gorchakovskiĭ, P.L., et al, *Ekologiia*, May-June 1985, No.3, p.12-20, In Russian. 28 refs.
Kuvaev, V.B.
Deserts, Alpine tundra, Alpine landscapes, Vegetation patterns, Altitude, Subarctic landscapes, Plant ecology, Ecosystems.

39-3745
Relict cryozerophyte communities of the western Chukotskiy Peninsula and their soils. [Reliktovye kriokserofitnye soobshchestva zapada Chukotskogo poluostrova i ikh pochvy]
Kozitskaia, L.T., et al, *Ekologiia*, May-June 1985, No.3, p.32-38, In Russian. 19 refs.
Razzhivin, V.IU.
Alpine tundra, Steppes, Forest tundra, Cryogenic soils, Plant ecology, Ecosystems.

39-3746
Determination of loads on an icebreaker fender device. [Opredelenie nagruzok na krantsevoe ustroĭstvo ledokola],
Makeev, A.N., et al, *Sudostroenie*, June 1985, No.6, p.20-21, In Russian. 2 refs.
Kuperman, A.M.
Sea ice distribution, Ice cover thickness, Pressure ridges, Ice navigation, Icebreakers, Ice loads, Design.

39-3747
Efficiency of single-bucket excavators in relation to their operation conditions. [Effektivnost' odnokovshovykh ekskavatorov s uchetom usloviĭ ikh ekspluatatsii],
Rysenkov, A.M., et al, *Mekhanizatsiia stroitel'stva*, May 1985, No.5, p.22-23, In Russian.
Skoromnikov, IU.M.
Earthwork, Construction equipment, Frozen ground strength, Excavation.

39-3748
Soil water resources and water availability for plants. [Resursy pochvennykh vod i vodoobespechennost' rastitel'nogo pokrova],
Budagovskiĭ, A.I., *Vodnye resursy*, July-Aug. 1985, No.4, p.3-13, In Russian. 9 refs.
Soil water migration, Water reserves, Ground water, Plant physiology, Roots, Water level, Transpiration, Evaporation.

39-3749
Water balance structure of river catchment areas in permafrost zones. [Struktura vodnogo balansa rechnykh vodosborov v zone mnogoletneĭ merzloty],
Vasilenko, N.G., et al, *Vodnye resursy*, July-Aug. 1985, No.4, p.25-29, In Russian. 9 refs.
Dobroumov, B.M.
Runoff, River basins, Permafrost hydrology, Water reserves, Permafrost distribution, Water balance.

39-3750
Calculation of bearing node of a spherical reservoir, allowing for temperature changes. [Raschet opornogo uzla sfericheskogo rezervuara s uchetom temperaturnykh vozdeĭstviĭ],
Sobolev, IU.V., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1985, No.4, p.9-12, In Russian. 3 refs.
Krasnovskiĭ, E.I.
Reservoirs, Walls, Heat transfer, Stresses, Strains.

39-3751
Performance of gantry-piles and their calculation for draw-out loads. [Osobennosti raboty i raschet kozlovykh svaĭ na vydergivanie],
Novskiĭ, A.V., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1985, No.4, p.106-108, In Russian. 3 refs.
Clay soils, Concrete piles, Foundations, Shear strength, Design.

39-3752
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Ice scoring, Icebergs, Ice volume, Bottom topography, Ocean bottom, Meetings, Profiles, Hydraulic structures.

39-3753
Lake Erie cable crossing—ice scour study.
Grass, J.D., *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.1-10.
Ice scoring, Lake ice, Transmission lines, Bottom topography, Trenching, Geophysical surveys, Echo sounding, Pipelines, Protection, Erie, Lake.

39-3754
Subaerial expressions of relict ice scour signatures in different environments on mainland Canada.
Mollard, J.D., *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.11-31, 10 refs.
Ice scoring, Glacial lakes, Paleoecology, Lacustrine deposits, Geomorphology, Icebergs, Pressure ridges, Ice floes, Distribution, Bottom topography.

39-3755
Predictions of extreme keel depths from submarine sonar data.
Wadhams, P., *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.32-47, 20 refs.
Ice scoring, Drift, Bottom topography, Profiles, Forecasting, Pipelines, Thickness, Distribution, Protection.

39-3756
Ice scour protection Drake F-76 flowline bundle.
Van Ieperen, M., *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.48-54, 2 refs.
Ice scoring, Offshore drilling, Artificial ice, Ice cover thickness, Drift, Ice floes, Protection, Platforms.

39-3757
Lake Erie ice scour investigation.
Comfort, G., et al, *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.55-99, 20 refs.
Ice scoring, Transmission lines, Bottom sediment, Lake ice, Ice conditions, Ice solid interface, Bottom topography, Protection, Safety, Forecasting, Erie, Lake.

39-3758
Physical dimensions of icebergs in the Labrador Sea.
Miller, J.D., et al, *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.103-113.
Hotzel, I.S.
Icebergs, Ice scoring, Profiles, Sea ice distribution, Ice volume, Statistical analysis.

39-3759
Relationships between measured iceberg dimensions.
Hotzel, I.S., et al, *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.114-129, 4 refs.
Miller, J.D.
Icebergs, Ice volume, Profiles, Water level, Ice scoring, Dimensions.

39-3760
Correlation between iceberg draft and above water dimensions.
El-Tahan, M., et al, *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.130-147, 15 refs.
Davis, H.L.
Icebergs, Ice volume, Water level, Drift, Statistical analysis, Ice scoring.

39-3761
Iceberg dimensions.
Brooks, L.D., *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.148-154, 2 refs.
Icebergs, Ice volume, Water level.

39-3762
Review of deep water scours in the Davis Strait and its relevance to present-day activity.
Guigne, J.Y., et al, *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.155-167, 5 refs.
Ross, D.I., Westergard, H.
Ice scoring, Bottom topography, Ocean currents, Ocean bottom, Davis Strait.

39-3763
Correlation between an ice ridge and sea bed geologic boundary.
Barnes, P.W., et al, *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.169-184, 10 refs.
Ross, C.R., Reimnitz, E.
Pressure ridges, Ocean bottom, Ice scoring, Bottom topography, Grounded ice, Acoustic measuring instruments, Profiles.

39-3764
Ice gouge characteristics related to sea-ice zonation, Beaufort Sea, Alaska.
Barnes, P.W., et al, *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.185-219, 22 refs.
Reimnitz, E., Rearic, D.M.
Ice scoring, Ocean bottom, Ice conditions, Bottom topography, Bottom sediment, Acoustic measuring instruments, Statistical analysis, Pressure ridges, Beaufort Sea.

39-3765
Frequency of ice scouring on the northeastern Grand Banks of Newfoundland using the interrelationship of scours and bedform migration.
Amos, C.L., et al, *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.220-221, 2 refs.
Barrie, J.V.
Ice scoring, Bottom topography, Ocean bottom, Time factor, Canada—Newfoundland.

39-3766
Shore-zone ice scour statistics: Implications to coastal development.
Harper, J.R., *National Research Council, Canada. Associate Committee on Geotechnical Research. Technical memorandum*, Apr. 1985, No.136, p.223-230, 9 refs.
Ice scoring, Pressure ridges, Fast ice, Statistical analysis, Hydraulic structures, Ice override, Arctic Ocean.

39-3767
Calculating the length of the season for peat mining with milling cutters. [Printsipy rascheta prodolzhitel'nosti sezona dobychi torfa frezernym sposobom],
Petrovskiĭ, E.E., et al, *Torfianaia promyshlennost'*, Nov. 1984, No.11, p.5-9, In Russian. 5 refs.
Antonevich, M.N., Razina, Z.N.
Swamps, Organic soils, Peat, Soil freezing, Frost penetration, Excavation, Equipment.

39-3768
Effect of freezing on the stability of slopes of peat-draining trenches. [Vliianie promorazhivaniia na ustoĭchivost' otkosov osushitel'nykh kanalov torfianykh mestorozhdeniĭ],
Gamajunov, N.I., et al, *Torfianaia promyshlennost'*, Nov. 1984, No.11, p.3-16, In Russian. 7 refs.
Stotland, D.M., Tovbin, I.B.
Peat, Drains, Slope stability, Hydrothermal processes, Drainage, Frost penetration, Seasonal freeze thaw.

39-3769
Improving the production of lump-peat under the natural and climatic conditions of the Ural Mountains. [Sovershenstvovanie proizvodstva kuskovogo torfa v prirodno-klimaticheskikh usloviiakh Urala],
Zhuravlev, A.V., et al, *Torfianaia promyshlennost'*, Jan. 1985, No.1, p.10-13, In Russian. 4 refs.
Swamps, Peat, Mining, Seasonal freeze thaw, Frost penetration, Drainage, Drying, Heating.

39-3770
Studying the year-round development and processing of peat under conditions of Siberia and the Ural Mountains. [Issledovaniia po razrabotke kruglogodovoĭ tekhnologii dobychi i pererabotki torfa v usloviiakh Urala i Zapadnoĭ Sibiri],
Aleksandrov, B.M., *Torfianaia promyshlennost'*, Jan. 1985, No.1, p.13-15, In Russian.
Organic soils, Permafrost depth, Peat, Active layer, Mining, Drainage, Drying, Ground ice, Heating.

39-3771
Influence of pre-winter compaction of peat deposits on moisture accumulation in a seasonally freezing layer. [Vliianie predzimnego uplotneniia torfianoĭ zalezhi na vlagonakoplenie v sezonnopromerzaiushchem sloe],
Ispirian, R.A., et al, *Torfianaia promyshlennost'*, Feb. 1985, No.2, p.8-10, In Russian. 2 refs.
Puzyrev, N.M.
Peat, Soil compaction, Organic soils, Soil freezing, Frost penetration, Soil water migration, Seasonal freeze thaw, Drainage.

39-3772
Determining the power of heating elements needed for heated floors of modular buildings. [Opredelenie moshchnosti greiushchikh elementov v konstruktsiiakh obogrevaemykh polov inventarnykh zdanii],
Kazantsev, I.A., et al, *Vodosnabzhenie i sanitarnaia tekhnika*, 1984, No.8, p.21-22, In Russian. 2 refs.
Brodskiĭ, G.E., Klement'ev, V.IU.
Electric heating, Modular construction, Thermal insulation, Residential buildings, Floors, Heat loss, Microclimatology, Design.

39-3773
Improving the working tool of an endless-screw snowplow. [Sovershenstvovanie konstruktsii rabochego organa shnekorotornogo snegoochistitelia],
Polivanov, IU.P., et al, *Stroitel'nye i dorozhnye mashiny*, Dec. 1984, No.12, p.24-25, In Russian. 2 refs.
Klashanov, F.K., Stepanenko, G.V.
Airports, Winter maintenance, Snow removal, Equipment, Design.

39-3774
Ice on planets of the solar system.
Krass, M.S., *Journal of glaciology*, 1984, 30(106), p.259-274, 43 refs., With French and German summaries.
Extraterrestrial ice, Permafrost, Glaciation, Glaciology, Planetary environments, Analysis (mathematics).

39-3775
Rates of deposition on lateral moraine embankments, glacier de Tsidjiore Nouve, Valais, Switzerland.
Small, R.J., et al, *Journal of glaciology*, 1984, 30(106), p.275-281, 11 refs., With French and German summaries.
Beecroft, I.R., Stirling, D.M.
Glacial deposits, Moraines, Glacier melting, Ice edge, Meltwater, Glacial erosion, Switzerland—Tsidjiore Nouve.

39-3776
Bore-hole survey at Dye 3, south Greenland.
Gundestrup, N.S., et al, *Journal of glaciology*, 1984, 30(106), p.282-288, 29 refs., With French and German summaries.
Hansen, B.L.
Ice pressure, Boreholes, Ice cores, Glacier surveys, Ice density, Temperature distribution, Paleoclimatology, Glacier flow, Density (mass/volume), Greenland.

39-3777
Electrical resistivity of ice from the Antarctic Peninsula, Antarctica.
Reynolds, J.M., et al, *Journal of glaciology*, 1984, 30(106), p.289-295, Refs. p.294-295., With French and German summaries.
Paren, J.G.
Meltwater, Ice shelves, Ice temperature, Electrical resistivity, Antarctica—Antarctic Peninsula, Antarctica—George VI Ice Shelf.
Georesistivity soundings have been carried out at four sites in the Antarctic Peninsula. The objective of the work was to investigate the electrical behaviour of ice from an area where substantial melting occurs in summer and from contrasting thermal regimes. Electrical measurements made at three sites along a flow line within George VI Ice Shelf reveal that: the resistivity of deep ice is similar to that of other antarctic ice shelves; the resistivity of the ice-shelf surface, which is affected by the percolation and refreezing of melt water, is similar to that of deep ice and hence the ice is polar in character. A compilation of published resistivities of deep ice from polar regions shows that the range of resistivities is very narrow, irrespective of the physical setting and history of of the ice. (Auth. mod.)

39-3778
Mathematical model for perched block formation.
Patterson, E.A., *Journal of glaciology*, 1984, 30(106), p.296-301, 11 refs., With French and German summaries.
Glacier ablation, Rocks, Ice solid interface, Heat balance, Glacier surfaces, Temperature variations, Surface temperature, Mathematical models.

39-3779
Analyzing the spatial distribution of drumlins: a two-phase mosaic approach.
Boots, B.N., et al, *Journal of glaciology*, 1984, 30(106), p.302-307, 26 refs., With French and German summaries.
Burns, R.K.
Glacial deposits, Paleoclimatology, Landforms, Topographic features, Pleistocene.

39-3780
Avalanche tarns.
Fitzharris, B.B., et al, *Journal of glaciology*, 1984, 30(106), p.308-312, 16 refs., With French and German summaries.
Owens, I.F.
Avalanche formation, Geomorphology, Avalanche deposits, Impact strength, Avalanche mechanics, Profiles, Mountains, New Zealand.

39-3781
Natural oscillations of an ice-covered channel.
Green, T., *Journal of glaciology*, 1984, 30(106), p.313-320, 13 refs., With French and German summaries.
Channels (waterways), Ice cover effect, Ice mechanics, Fluid mechanics, Ice elasticity, Oscillations, Ice-bound rivers, Mathematical models.

39-3782
Snow stability index.
Conway, H., et al, *Journal of glaciology*, 1984, 30(106), p.321-327, 25 refs., With French and German summaries.
Abrahamson, J.
Snow cover stability, Shear strength, Snow strength, Avalanche formation, Tensile properties, Slope stability.

39-3783
Air permeability as a textural indicator of snow.
Conway, H., et al, *Journal of glaciology*, 1984, 30(106), p.328-333, 16 refs., With French and German summaries.
Abrahamson, J.
Snow strength, Tensile properties, Snow cover structure, Snow permeability, Ice air interface, Snow density, Slope orientation, Metamorphism (snow), Measuring instruments, Experimentation.

39-3784
Glacier flow model incorporating longitudinal deviatoric stresses.
Shoemaker, E.M., et al, *Journal of glaciology*, 1984, 30(106), p.334-340, 10 refs., With French and German summaries.
Morland, L.W.
Glacier flow, Stresses, Basal sliding, Shear stress, Mathematical models.

39-3785
Glacier sliding at subfreezing temperatures.
Shreve, R.L., *Journal of glaciology*, 1984, 30(106), p.341-347, 39 refs., With French and German summaries.
Glacier flow, Basal sliding, Surface roughness, Glacier melting, Glacier beds, Striations, Temperature effects, Regelation, Sliding, Analysis (mathematics).

39-3786
Shear strength characteristics of frozen coarse granular debris.
Nickling, W.G., et al, *Journal of glaciology*, 1984, 30(106), p.348-357, 21 refs., With French and German summaries.
Bennett, L.
Frozen ground strength, Shear strength, Talus, Ground ice, Stress strain diagrams, Internal friction, Cohesion, Ice volume, Grain size.

39-3787
New dry extraction system for gases in ice.
Moor, E., et al, *Journal of glaciology*, 1984, 30(106), p.358-361, 8 refs., With French and German summaries.
Stauffer, B.
Ice composition, Ice air interface, Air entrainment, Bubbles, Gas inclusions, Instruments.

39-3788
Snow wetness measurement by fluorescent dye dilution.
Davis, R.E., et al, *Journal of glaciology*, 1984, 30(106), p.362-363, 8 refs., With French and German summaries.
Dozier, J.
Snow water content, Unfrozen water content, Measuring instruments, Accuracy.

39-3789
Can the mass balance of a glacier be estimated from its equilibrium-line altitude.
Braithwaite, R.J., *Journal of glaciology*, 1984, 30(106), p.364-368, 21 refs., With French and German summaries.
Glacier mass balance, Altitude, Measuring instruments.

39-3790
On the isotopic composition in (delta) D and (delta) O-18 of water and ice during freezing.
Souchez, R.A., et al, *Journal of glaciology*, 1984, 30(106), p.369-372, 7 refs., With French and German summaries.
Jouzel, J.
Ice composition, Water chemistry, Isotope analysis, Freezing, Ice melting, Analysis (mathematics).

39-3791
Electrical resistivity soundings of glacier beds: a test study on Grubengletscher.
Haeberli, W., et al, *Journal of glaciology*, 1984, 30(106), p.373-376, 24 refs., With French and German summaries.
Fisch, W.
Glacier beds, Topographic features, Sounding, Electrical resistivity, Glacier thickness, Ice solid interface, Glacier flow, Glacial erosion, Sliding.

39-3792
Accelerating flow of the Brunt Ice Shelf, Antarctica.
Simmons, D.A., et al, *Journal of glaciology*, 1984, 30(106), p.377-380, 6 refs., With French and German summaries.
Rouse, J.R.
Ice shelves, Ice creep, Antarctica—Brunt Ice Shelf.
Position fixes made at the British Antarctic Survey station, Halley, on the Brunt Ice Shelf are considered for the period 1968-82. These show an initial westward velocity of approximately 400 m/a rising to over 700 m/a by the end of the period. The data are well fitted by two straight lines. The first for 1968-71 has a slope 430 m/a in agreement with that found by Thomas (1973) for the period up to 1968. The second for 1972-83 has a slope 740 m/a, a large increase sustained for up to 10 years. (Auth.)

39-3793
Reconsideration of the mass balance of a portion of the Ross Ice Shelf, Antarctica.
Jezek, K.C., et al, *Journal of glaciology*, 1984, 30(106), MP 1919, p.381-384, 6 refs., With French and German summaries.
Bentley, C.R.
Ice shelves, Grounded ice, Mass balance, Antarctica—Ross Ice Shelf.
The identification of a small region of grounded ice in the northwestern sector of the Ross Ice Shelf has forced a re-evaluation of the mass-balance calculations carried out by Thomas and Bentley (1978). Those authors concluded that the Ross Ice Shelf up-stream of Crary Ice Rise was thickening, but they did not take into account the effects on the velocity field of grounded ice which is located near the input gate to their volume element. Reasonable estimates of the degree to which the ice velocity just up-stream of the grounded ice is diminished indicate that it is no longer possible to conclude that the ice shelf is thickening using Thomas and Bentley's original flow band. Therefore, a new flow band was chosen which was grid east of Thomas and Bentley's band and unaffected by any nearby grounded areas. The mass balance in this flow band was found to be zero within experimental error; a difference exceeding about 0.2 m/a in magnitude between the thickening and bottom freeze-on rates is unlikely. (Auth.)

39-3794
Highway snow and ice control. State-of-the-art.
Gustafson, K., *Sweden. Statens väg- och trafikinstitut. Rapport*, 1985, No.276A, 124p., Refs. p.97-104.
Road icing, Ice control, Ice removal, Snow removal, Chemical ice prevention, Mechanical ice prevention, Surface properties, Chemical composition, Warning systems, Winter maintenance, Road maintenance.

39-3795
Truck drivers' attitudes to winter road maintenance. [Lastbilsförares inställning till väghållning och halkbekämpning],
Arnberg, P.W., *Sweden. Statens väg- och trafikinstitut. Meddelande*, 1984, No.352, 17p. + appends., In Swedish with English summary.
Winter maintenance, Road maintenance, Trafficability, Ice control, Chemical ice prevention, Salting, Skid resistance, Rubber ice friction, Snow removal.

39-3796
Experiments with unsalted roads during the winter 1982/83. Effects of road conditions and consequences for road users and road maintenance authorities. [Försök med osaltade vägar vintern 1982/83. Inverkan på väglaget och konsekvenser för trafikanten och väghållaren],
Björketun, U., et al, *Sweden. Statens väg- och trafikinstitut. Meddelande*, 1984, No.363, 63p., In Swedish with English summary. 9 refs.
Karlsson, J.-Å., Öberg, G.
Road maintenance, Winter maintenance, Ice control, Road icing, Salting, Rubber ice friction, Forecasting, Sweden.

39-3797
Speeds on rural roads. Effect of different factors on light car speeds on straight and level road sections. [Hastigheter i landsvägstrafik. Olika faktorers inverkan på hastigheten för lätta bilar på rak och plan väg],
Kolsrud, B., *Sweden. Statens väg- och trafikinstitut. Meddelande,* 1984, No.390, 36p., In Swedish with English summary.
Trafficability, Meteorological factors, Vehicles, Road maintenance, Velocity, Winter maintenance.

39-3798
Dynamic processes in forests of the Far East. [Dinamicheskie protsessy v lesakh Dal'nego Vostoka],
Man'ko, IU.I., ed, Vladivostok, 1984, 168p., In Russian. For selected papers see 39-3799 through 39-3805. Refs. passim.
Komarova, T.A., ed.
Forestry, Revegetation, Forest fires, Cryogenic soils, Litter, Trees (plants), Plant ecology.

39-3799
Regularities governing secondary successions in forests of southern Sikhote Alin. [K voprosu o zakonomernostiakh vtorichnykh sukt sessiĭ v lesakh IUzhnogo Sikhote-Alinia],
Komarova, T.A., Dinamicheskie protsessy v lesakh Dal'nego Vostoka (Dynamic processes in forests of the Far East) edited by IU.I. Man'ko and T.A. Komarova, Vladivostok, 1984, p.20-35, In Russian. 72 refs.
Forest soils, Forest fires, Revegetation, Forestry, Cryogenic soils.

39-3800
Dynamics of forest resources in northern Sakhalin Island. [Dinamika lesnykh resursov na severe Sakhalina],
Sheĭngauz, A.S., Dinamicheskie protsessy v lesakh Dal'nego Vostoka (Dynamic processes in forests of the Far East) edited by IU.I. Man'ko and T.A. Komarova, Vladivostok, 1984, p.36-54, In Russian. 10 refs.
Forest land, Cryogenic soils, Alpine landscapes, Forest fires, Soil erosion, Revegetation.

39-3801
Dynamics of natural revegetation of conifers in cleancut areas of Sakhalin Island. [Dinamika estestvennogo vozobnovleniia khvoĭnykh porod na sploshnykh vyrubkakh Sakhalina],
Klintsov, A.P., Dinamicheskie protsessy v lesakh Dal'nego Vostoka (Dynamic processes in forests of the Far East) edited by IU.I. Man'ko and T.A. Komarova, Vladivostok, 1984, p.55-66, In Russian. 19 refs.
Forestry, Revegetation, Cryogenic soils, Trees (plants), Plant ecology.

39-3802
Age-reestablishment dynamics of larch in the Bikin River basin (Central Sikhote Alin). [Vosstanovitel'no-vozrastnaia dinamika listvennichnikov basseĭna reki Bikin (Srednīĭ Sikhote-Alin')],
Glagolev, V.A., Dinamicheskie protsessy v lesakh Dal'nego Vostoka (Dynamic processes in forests of the Far East) edited by IU.I. Man'ko and T.A. Komarova, Vladivostok, 1984, p.91-103, In Russian. 31 refs.
Taiga, Cryogenic soils, Mountain soils, Forest fires, Revegetation, Forestry.

39-3803
Changes in vegetation cover and seasonal freezing of soils in conifer-broad-leaf forests induced by industrial cuttings. [Izmeneniia rastitel'nogo pokrova i sezonnogo promerzaniia pochv pod vliianiem promyshlennykh rubok v khvoĭno-shirokolistvennykh lesakh],
Zhil'tsov, A.S., Dinamicheskie protsessy v lesakh Dal'nego Vostoka (Dynamic processes in forests of the Far East) edited by IU.I. Man'ko and T.A. Komarova, Vladivostok, 1984, p.104-118, In Russian. 4 refs.
Forest land, Forest soils, Seasonal freeze thaw, Forestry, Soil freezing, Frost penetration.

39-3804
Seasonal dynamics of fall-off and its fractional composition in mountain forest biogeocenoses of Verkhneussuriyskiy Station. [Sezonnaia dinamika opada i ego fraktsionnyĭ sostav v gorno-lesnykh biogeotsenozakh Verkhneussuriĭskogo statsionara],
Selivanova, G.A., Dinamicheskie protsessy v lesakh Dal'nego Vostoka (Dynamic processes in forests of the Far East) edited by IU.I. Man'ko and T.A. Komarova, Vladivostok, 1984, p.119-129, In Russian. 16 refs.
Forest land, Litter, Forest soils, Alpine landscapes, Cryogenic soils, Trees (plants), Plant ecology.

39-3805
Forest fire effect on the litter of cedar-broad-leaf forests of southern Sikhote Alin and peculiarities of its reestablishment. [Vozdeĭstvie pozharov na podstilku v kedrovo-shirokolistvennykh lesakh IUzhnogo Sikhote-Alinia i osobennosti ikh vosstanovleniia],
Sapozhnikov, A.P., et al, Dinamicheskie protsessy v lesakh Dal'nego Vostoka (Dynamic processes in forests of the Far East) edited by IU.I. Man'ko and T.A. Komarova, Vladivostok, 1984, p.139-146, In Russian. 6 refs.
Kostenkova, A.F.
Forest land, Litter, Forest fires, Forest soils, Forestry, Revegetation.

39-3806
Role of snow cover in differentiation of landscape zones. [Rol' snezhnogo pokrova v differentsiatsii landshaftnoĭ sfery],
Nefed'eva, E.A., et al, Moscow, Nauka, 1985, 143p., In Russian with English table of contents enclosed. Refs. p.136-142.
[Ashina, A.V.
Landscape types, Snow cover distribution, Snow cover effect, Snow depth, Polar regions, Taiga, Alpine landscapes.

39-3807
Preservation and stability of landscapes affected by human activities. [Sokhranenie i ustoĭchivost' antropogennykh landshaftov],
Matveev, N.P., ed, Moscow, 1984, 107p., In Russian. For selected papers see 39-3808 and 39-3809. Refs. passim.
Soil erosion, Permafrost transformation, Hydrothermal processes, Tracked vehicles, Revegetation, Alpine landscapes, Tundra, Solifluction, Thermokarst, Forest tundra, Human factors, Topographic effects.

39-3808
Preservation and stability of mountain landscapes in inner Asia. [Sokhranenie i ustoĭchivost' gornykh landshaftov vnutrenneĭ Azii],
Mikhaĭlov, I.S., et al, Sokhranenie i ustoĭchivost' antropogennykh landshaftov (Preservation and stability of landscapes affected by human activities) edited by N.P. Matveev, Moscow, 1984, p.17-23, In Russian. 2 refs.
Novozhilova, V.V.
Soil erosion, Alpine tundra, Organic soils, Meadow soils, Solifluction, Geocryology, Thermokarst, Alpine landscapes, Topographic effects, Vegetation patterns, Human factors, Economic development.

39-3809
Prospects for the development of northern landscapes affected by human activities. [Perspektivy razvitiia antropogennykh landshaftov na Severe],
Solov'eva, O.V., Sokhranenie i ustoĭchivost' antropogennykh landshaftov (Preservation and stability of landscapes affected by human activities) edited by N.P. Matveev, Moscow, 1984, p.31-35, In Russian. 4 refs.
Tundra, Permafrost transformation, Revegetation, Soil erosion, Lichens, Human factors, Hydrothermal processes, Tracked vehicles.

39-3810
Construction characteristics of greenhouse bases and foundations on permafrost soils.
Shchelokov, V.K., et al, *Soil mechanics and foundation engineering,* Sep.-Oct. 1984 (Pub. Mar. 85), 21(5), p.185-188, Translated from Osnovaniia, fundamenty i mekhanika gruntov.
Gokhman, M.R., Petrov, V.V.
Foundations, Permafrost beneath structures, Permafrost bases, Ground thawing, Greenhouses, Settlement (structural), Floors, Roofs.

39-3811
Experience with and prospects for use of jet technology in construction.
Mosin, V.D., *Soil mechanics and foundation engineering,* Sep.-Oct. 1984 (Pub. Mar. 85), 21(5), p.189-192, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 8 refs.
Earthwork, Hydraulic jets, Grouting, Underground facilities, Soil stabilization, Cements, Active layer.

39-3812
Jet technology for soil stabilization.
Khasin, M.F., et al, *Soil mechanics and foundation engineering,* Sep.-Oct. 1984 (Pub. Mar. 85), 21(5), p.196-199, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 6 refs.
Malyshev, L.I., Broid, I.I.
Soil stabilization, Sands, Loams, Grouting, Cements, Hydraulic jets.

39-3813
Determination of the reliability factor for design of permafrost bases of structures.
Khrustalev, L.N., et al, *Soil mechanics and foundation engineering,* Sep.-Oct. 1984 (Pub. Mar. 85), 21(5), p.216-219, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 5 refs.
Pustovoĭt, G.P.
Foundations, Piles, Permafrost beneath structures, Permafrost bases, Buildings, Permafrost thermal properties, Soil strength.

39-3814
Evaluation of accuracy of laboratory compression tests on thawing soils.
Ponomarev, V.D., *Soil mechanics and foundation engineering,* Sep.-Oct. 1984 (Pub. Mar. 85), 21(5), p.220-222, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 10 refs.
Permafrost physics, Ground thawing, Permafrost thermal properties, Compressive properties, Tests, Laboratory techniques.

39-3815
Experience in reconstructing the radial gate of the spillway at the Vilyuy hydroelectric station.
Sitnianskiĭ, A.I., *Hydrotechnical construction,* Sep. 1984 (Pub. Mar. 85), 18(9), p.414-418, Translated from Gidrotekhnicheskoe stroitel'stvo.
Dams, Hydraulic structures, Spillways, Electric power, Permafrost beneath structures, Permafrost depth.

39-3816
Some problems of the design, manufacture, installation and operation of mechanical equipment in low-temperature regions.
Polonskiĭ, G.A., *Hydrotechnical construction,* Sep. 1984 (Pub. Mar. 85), 18(9), p.418-426, Translated from Gidrotekhnicheskoe stroitel'stvo. 5 refs.
Glaze, Electric power, Hydraulic structures, Steel structures, Icing, Design, Frost resistance, Equipment, Ice accretion.

39-3817
Pile foundation deformation during residential building construction under frost heave action.
Kosterin, E.V., *Soil mechanics and foundation engineering,* Nov.-Dec. 1984 (Pub. May 85), 21(6), p.247-251, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 7 refs.
Large panel buildings, Foundations, Piles, Permafrost beneath structures, Frost heave, Settlement (structural).

39-3818
Combined method for electric thawing of permafrost foundation beds.
Maksimenko, E.S., *Soil mechanics and foundation engineering,* Nov.-Dec. 1984 (Pub. May 85), 21(6), *p.261-263,* Translated from Osnovaniia, fundamenty i mekhanika gruntov. 6 refs.
Permafrost bases, Buildings, Permafrost control, Artificial thawing, Electric heating.

39-3819
Mass crystallization with allowance for fluctuations of crystal growth rate.
Moshinskiĭ, A.I., et al, *Journal of applied mechanics and technical physics,* Nov.-Dec. 1984 (Pub. May 85), 25(6), p.899-904, Translated from Zhurnal prikladnoĭ mekhaniki i tekhnicheskoĭ fiziki. 10 refs.
Sibirev, M.I.
Solutions, Phase transformations, Crystal growth, Analysis (mathematics).

39-3820
Fine and dusty sands used as frost-heave protection in railroad tracks. [Melkie i pylevanye peski v protivopuchinnykh konstruktsiiakh puti],
Brediuk, G.P., et al, *Transportnoe stroitel'stvo,* May 1985, No.5, p.13-14, In Russian.
Murovannyĭ, N.P.
Embankments, Railroad tracks, Foundations, Swamps, Frost heave, Countermeasures, Sands, Fines.

39-3821
Design and construction of couch-type abutments inside embankments. [Proektirovanie i stroitel'stvo ustoev divannogo tipa v nasypiakh],
Pyshko, L.V., *Transportnoe stroitel'stvo,* May 1985, No.5, p.19-29, In Russian.
Bridges, Embankments, Abutments, Baykal Amur railroad, Foundations, Concrete structures, Settlement (structural), Frost heave.

39-3822
Machines used in BAM construction. [Mekhanizatsiia rabot pri sooruzhenii BAMa],
Chelombiev, V.N., et al, *Transportnoe stroitel'stvo*, May 1985, No.5, p.32-33, In Russian.
Khalkis, M.L.
Railroad tracks, Embankments, Earthwork, Electric power, Transportation, Baykal Amur railroad, Construction equipment.

39-3823
Earthwork for the construction of self-flowing thermoplastic pipelines. [Proizvodstvo zemlianykh rabot pri prokladke samotechnykh truboprovodov iz termoplastov],
Otstavnov, A.A., *Energeticheskoe stroitel'stvo za rubezhom*, June 1985, No.3, p.38-43, In Russian. 6 refs.
Plastics, Pipelines, Embankments, Frost penetration, Construction materials, Earthwork, Soil freezing, Trenching, Loads.

39-3824
Using satellite photographs in mapping recent exogenic processes in southern Baykal and Transbaykal areas, for environmental protection. [Prirodookhrannoe kartografirovanie sovremennykh ekzogennykh protsessov s ispol'zovaniem kosmicheskikh snimkov (na primere IUzhnogo Pribaĭkal'ia i Zabaĭkal'ia)],
Abalakov, A.D., *Geografiia i prirodnye resursy*, Apr.-June 1985, No.2, p.59-67, In Russian. 39 refs.
Permafrost control, Spaceborne photography, Mapping, Environmental protection, Charts, Permafrost distribution.

39-3825
Practical application of formulas of maximal rainflood runoff derived for the Upper Kolyma Basin rivers. [Prakticheskoe primenenie formul maksimal'nogo stoka dozhdevykh pavodkov dlia rek basseĭna verkhneĭ Kolymy],
Ivan'o, IA.M., *Geografiia i prirodnye resursy*, Apr.-June 1985, No.2, p.107-111, In Russian. 17 refs.
River basins, Permafrost beneath rivers, Permafrost hydrology, Floods, Runoff, Permafrost distribution, Charts.

39-3826
Tele-indication of dynamic states of soil and vegetation covers. [Distantsionnaia indikatsiia dinamicheskikh sostoianiĭ pochvenno-rastitel'nogo pokrova],
Konstantinov, V.D., et al, *Geografiia i prirodnye resursy*, Apr.-June 1985, No.2, p.112-119, In Russian. 24 refs.
Gorozhankina, S.M.
Forest soils, Paludification, Taiga, Soil water migration, Land reclamation, Plant ecology, Spaceborne photography, Photointerpretation, Mapping, Charts, Forestry.

39-3827
Structure of ice Ih. ***Ab initio* two- and three-body water-water potentials and geometry optimization.**
Yoon, B.J., et al, *Journal of chemical physics*, Aug. 1, 1985, 83(3), p.1223-1231, 26 refs.
Morokuma, K., Davidson, E.R.
Ice crystal structure, Molecular structure, Protons.

39-3828
Deicer composition.
Duane, J.J., et al, *U.S. Patent Office. Patent*, July 2, 1963, 6 col., USP-3,096,290, 5 refs.
Tappan, G.F.
Ice removal, Chemical ice prevention, Chemical composition, Vehicles, Icing, Windows, Artificial melting, Countermeasures.

39-3829
Deicing system.
Jusyk, S.J., *U.S. Patent Office. Patent*, March 16, 1965, 6 col. + figs., USP-3,173,491, 5 refs.
Ice removal, Ice adhesion, Ice accretion, Equipment, Countermeasures, Surface properties, Aerodynamics.

39-3830
Deicer composition.
Standish, N.W., et al, *U.S. Patent Office. Patent*, May 25, 1965, 6 col., USP-3,185,648, 2 refs.
Cross, G.G.
Chemical ice prevention, Ice removal, Chemical composition, Antifreezes, Road icing, Ice melting, Snow melting, Artificial melting, Countermeasures.

39-3831
Electrical deicer.
Spencer, J.H., Jr., et al, *U.S. Patent Office. Patent*, Aug. 31, 1965, 4 col. + figs., USP-3,204,084, 9 refs.
Cajon, E., Bowden, D.T.
Aircraft icing, Ice removal, Electric heating, Ice prevention, Ice accretion, Countermeasures.

39-3832
Deicer composition.
Standish, N.W., et al, *U.S. Patent Office. Patent*, Jan. 4, 1966, 6 col., USP-3,227,654, 2 refs.
Milberger, E.C.
Ice removal, Ice melting, Chemical ice prevention, Chemical composition, Antifreezes, Road icing, Countermeasures, Corrosion.

39-3833
Foamable de-icing/defrosting composition and method of de-icing and defrosting.
Dawtrey, S., et al, *U.S. Patent Office. Patent*, Oct. 31, 1967, 4 col., USP-3,350,314, 2 refs.
King, H.C.
Ice removal, Chemical ice prevention, Chemical composition, Defrosting, Aircraft icing, Countermeasures.

39-3834
Aircraft deicing shoe.
Kageorge, P.W., et al, *U.S. Patent Office. Patent*, Feb. 27, 1968, 4 col. + figs., USP-3,370,814, 4 refs.
Uden, G.E.
Aircraft icing, Ice removal, Equipment, Ducts, Pneumatic equipment.

39-3835
Process and apparatus for detecting ice formation.
Roussel, P.A., *U.S. Patent Office. Patent*, June 30, 1970, 6 col. + figs., USP-3,517,900, 3 refs.
Ice detection, Ice formation, Aircraft icing, Ice removal, Freezing points, Equipment, Warning systems.

39-3836
Deicing boot and method of making the same.
Son Gullberg, H.H., *U.S. Patent Office. Patent*, July 7, 1970, 6 col. + figs., USP-3,519,229, 2 refs.
Aircraft icing, Ice removal, Ice prevention, Ice accretion, Vehicles, Countermeasures.

39-3837
Deicing apparatus.
Liardi, V.L., *U.S. Patent Office. Patent*, Aug. 11, 1970, 4 col., USP-3,524,044, 10 refs.
Ice removal, Windows, Vehicles, Electric heating, Equipment.

39-3838
Aircraft deicer system and apparatus.
Yaste, E.E., *U.S. Patent Office. Patent*, Oct. 13, 1970, 4 col. + figs., USP-3,533,395, 4 refs.
Aircraft icing, Ice removal, Heating, Fluid flow, Equipment.

39-3839
Pavement deicer.
Hinrichs, B.F., *U.S. Patent Office. Patent*, Nov. 17, 1970, 6 col. + figs., USP-3,540,655, 4 refs.
Road icing, Ice removal, Pavements, Ice control, Salting, Humidity, Thermostats.

39-3840
Device for deicing surfaces of thin-walled structures.
Levin, I.A., et al, *U.S. Patent Office. Patent*, Dec. 22, 1970, 6 col. + figs., USP-3,549,964, 1 ref.
Ice removal, Ice prevention, Aircraft icing, Ship icing, Walls, Electromagnetic properties, Pulse generators.

39-3841
Aircraft deicing apparatus.
Cook, V.H., *U.S. Patent Office. Patent*, Oct. 12, 1971, 8 col. + figs., USP-3,612,075, 7 refs.
Aircraft icing, Ice removal, Snow removal, Chemical ice prevention, Antifreezes, Liquids, Equipment, Countermeasures.

39-3842
Porous metal panel to distribute deicing fluid onto the leading edge of a surface.
Nichols, G.L., *U.S. Patent Office. Patent*, Oct. 19, 1971, 4 col. + figs., USP-3,614,038, 5 refs.
Aircraft icing, Vehicles, Ice removal, Metals, Porosity, Ice prevention, Antifreezes, Countermeasures.

39-3843
Deicing device.
Kline, R.O., *U.S. Patent Office. Patent*, Nov. 30, 1971, 8 col. + figs., USP-3,623,684, 3 refs.
Aircraft icing, Ship icing, Ice removal, Ice breaking, Ice prevention, Inflatable structures.

39-3844
Device for deicing rails.
Obata, Y., *U.S. Patent Office. Patent*, Mar. 7, 1972, 4 col. + figs., USP-3,648,017, 3 refs.
Railroad tracks, Ice prevention, Ice removal, Electric heating.

39-3845
Electric system of a device for deicing the surface of thinwalled structures.
Levin, I.A., *U.S. Patent Office. Patent*, June 27, 1982, 4 col. + figs., USP-3,672,610, 6 refs.
Aircraft icing, Ice removal, Ship icing, Electric equipment, Antennas, Vibration.

39-3846
Ice-preventive and deicing oil-in-water emulsion.
Ayres, D.J., *U.S. Patent Office. Patent*, Jan. 16, 1973, 12 col., USP-3,711,409, 6 refs.
Ice removal, Ice prevention, Railroad equipment, Lubricants, Antifreezes.

39-3847
Electric system of a device for deicing the surface of thinwalled structures.
Levin, I.A., *U.S. Patent Office. Patent*, Dec. 18, 1973, 6 col. + figs., USP-3,779,488, 6 refs.
Ice removal, Electric equipment, Aircraft icing, Vibration, Structures.

39-3848
Method of protecting pavement from corrosive salts and an impermeable pavement membrane and pavement overlay for use in said method.
Kietzman, J.H., et al, *U.S. Patent Office. Patent*, Mar. 11, 1975, 16 col., USP-3,870,426, 9 refs.
Tocci, M.P.
Pavements, Corrosion, Salting, Road icing, Ice removal, Snow removal, Reinforced concretes, Countermeasures, Bridges.

39-3849
Road surface deicing device.
Cox, S.M., *U.S. Patent Office. Patent*, Dec. 7, 1976, 2 col. + figs., USP-3,995,965, 9 refs.
Road icing, Ice removal, Concrete heating, Pipeline heating, Ice prevention.

39-3850
Method for deicing aircraft.
Thornton-Trump, W.E., *U.S. Patent Office. Patent*, June 28, 1977, 8 col., USP-4,032,090, 8 refs.
Aircraft icing, Ice removal, Ice prevention, Surface temperature, Water temperature, Spraying.

39-3851
Deicing apparatus and method.
Magenheim, B., *U.S. Patent Office. Patent*, Nov. 29, 1977, 8 col. + figs., USP-4,060,211, 3 refs.
Aircraft icing, Ice removal, Microwaves, Ice melting, Propellers, Helicopters, Electric heating.

39-3852
Protecting pavement or concrete materials against the effects of the destructive action of freezing and thawing of water or brine solutions.
Hansen, C.N., *U.S. Patent Office. Patent*, June 13, 1978, 24 col., USP-4,094,805, 7 refs.
Pavements, Concrete structures, Freeze thaw cycles, Ice removal, Snow removal, Countermeasures, Solutions, Salting.

39-3853
Electrically heated air data sensing device.
Doremus, J.A., et al, *U.S. Patent Office. Patent*, Oct. 17, 1978, 6 col., USP-4,121,088, 12 refs.
Kirkpatrick, W.R.
Electric heating, Ice prevention, Electrical resistivity, Measuring instruments.

39-3854
Deicing and traction forming composition and methods of making same.
Lowe, H.E., Jr., *U.S. Patent Office. Patent*, Jan. 6, 1981, 4 col. + figs., USP-4,243,415, 4 refs.
Ice removal, Road icing, Traction, Ice melting, Clays, Particles, Salting, Coatings.

39-3855
Method for producing and storing sand coated with calcium chloride.
Hamlin, R.S., et al, *U.S. Patent Office. Patent*, Jan. 27, 1981, 4 col., USP-4,247,331, 7 refs.
Higgins, W.L.
Road icing, Ice removal, Sands, Salting, Coatings, Traction.

39-3856
Process of making calcium acetate deicing agents.
Gancy, A.B., *U.S. Patent Office. Patent*, Mar. 22, 1983, 10 col., USP-4,377,488, 1 ref.
Ice removal, Solutions, Road icing, Antifreezes, Countermeasures.

39-3857
Process of making two uniform grades of calcium magnesium acetate.
Gancy, A.B., *U.S. Patent Office. Patent*, June 21, 1983, 6 col. + figs., USP-4,389,323, 1 ref.
Ice removal, Solutions, Antifreezes, Chemical composition.

39-3858
Water-activated exothermic chemical deicing formulations.
Gancy, A.B., *U.S. Patent Office. Patent,* Aug. 23, 1983, 6 col., USP-4,400,285, 1 ref.
Antifreezes, Chemical composition, Chemical ice prevention, Road icing, Ice removal.

39-3859
Water-activated exothermic chemical formulations.
Gancy, A.B., *U.S. Patent Office. Patent,* Jan. 10, 1984, 10 col., USP-4,425,251, 3 refs.
Antifreezes, Chemical ice prevention, Road icing, Ice removal, Chemical composition.

39-3860
Novel road and highway deicer and traction agent, and process for its manufacture.
Gancy, A.B., *U.S. Patent Office. Patent,* Feb. 7, 1984, 8 col., USP-4,430,242, 2 refs.
Road icing, Ice removal, Traction, Antifreezes, Solutions, Chemical composition.

39-3861
Process of making calcium acetate deicing agents and product.
Gancy, A.B., *U.S. Patent Office. Patent,* Apr. 24, 1984, 10 col., USP-4,444,672, 2 refs.
Antifreezes, Ice removal, Traction, Solutions, Chemical ice prevention, Chemical composition.

39-3862
Coarse-particle calcium/magnesium acetate suitable for roadway and walkway deicing, and process for its manufacture.
Gancy, A.B., *U.S. Patent Office. Patent,* Dec. 18, 1984, 10 col., USP-4,488,978, 12 refs.
Ice removal, Chemical ice prevention, Traction, Solutions, Particles, Chemical composition.

39-3863
Icebergs off south Victoria Land, Antarctica.
Keys, J.R., *New Zealand antarctic record,* 1985, 6(2), p.1-7, 9 refs.
Icebergs, Sea ice, Remote sensing, Antarctica—Ross Sea, Antarctica—McMurdo Sound.
The Ross Sea Iceberg Project goals are to determine the sizes, drafts, shapes, numbers, sources and movement of icebergs in Ross Sea. Initially the logistically convenient areas around Ross Island and the Victoria Land coast are being examined. The first efforts are focussed off the South Victoria Land coast where an annual strip of fast sea ice about 20 km wide provides a convenient platform for closely examining icebergs trapped in it. Landsat-1 imagery and old aerial photographs have shown that at least 200 icebergs can be present in any one year in a 200 km stretch of coast north of the McMurdo Ice Shelf. (Auth.)

39-3864
Plio-Pleistocene glacial sequence cored at CIROS 2, Ferrar Fjord, western McMurdo Sound.
Barrett, P.J., *New Zealand antarctic record,* 1985, 6(2), p.8-19, 17 refs.
Ice shelves, Ice cores, Glacial geology, Antarctica—Ross Ice Shelf.
CIROS in 1984 drilled one hole near the middle of Ferrar Fjord, western McMurdo Sound, in 211 m of water. A sequence of sand and glacial debris was cored (67 percent recovery) to basement gneiss at 166 m. A preliminary estimate of the age of the sequence, based on diatoms and the abundance of basaltic debris, has it ranging from Early Pliocene (about 4 m.y.) to the present, and equivalent to the upper 183 m of DVDP 10 and the upper 240 m of DVDP 11 in adjacent Taylor Valley. A good chronology is expected from the paleomagnetic stratigraphy, diatom assemblages and radiometric dating of basaltic material, including a vitric tuff from 124 m sub-bottom. The core has been subdivided into 13 lithologic units, representing alternations of "interglacial" and "glacial" conditions and these units are described. (Auth. mod.)

39-3865
Volcanic deformation studies—Mt. Erebus.
Scott, B., et al, *New Zealand antarctic record,* 1985, 6(2), p.20-23.
Otway, P.
Volcanoes, Geophysical surveys, Measuring instruments, Antarctica—Erebus, Mount.
In an effort to provide reliable forecasts of time, place, and magnitude of possible eruptions, devices have been established on Mount Erebus to measure vertical and horizontal deformation indicators. These measuring networks are discussed and a chart showing them is included. Results of the survey indicate that the summit of Mount Erebus is deflating, that is, becoming smaller, at the present time.

39-3866
Antarctic telecommunications past, present and future.
Thomson, R.B., *New Zealand antarctic record,* 1985, 6(2), p.40-42.
Telecommunication, Radio communication, Antarctica.
A brief overview is given of the history and development of antarctic communications, the present situation, and New Zealand's specific communications role. HF communications has always been a problem and much thought is being given to upgrading the system.

39-3867
Diverting Soviet rivers: some possible repercussions for the Arctic Ocean.
Cattle, H., *Polar record,* May 1985, 22(140), p.485-498, 33 refs.
River flow, Water supply, Sea ice distribution, River diversion, Arctic Ocean.

39-3868
Marginal Ice Zone Experiment (MIZEX) 1984: Scott Polar Research Institute participation.
Wadhams, P., *Polar record,* May 1985, 22(140), p.505-510, 7 refs.
Sea ice, Ice water interface, Ice edge, Research projects.

39-3869
***Fifty-eighth annual report;* year ending 30 September 1984.**
Scott Polar Research Institute, *Polar record,* May 1985, 22(140), p.561-576, Numerous refs.
Research projects, Low temperature research.
The report reviews SPRI activities in the teaching/lecture series to degree seeking students; research in radio echo sounding and glacier geophysics; sea ice; remote sensing by satellite; and geographical and historical studies. A list of publications is given and library and information services are reviewed. Income and expenses are shown in overview; the staff is listed, and gifts to the institute are acknowledged.

39-3870
Meteorites in Antarctica—statistics on falls, concentration, recovery and alteration on ice-sheet.
Nagata, T., *Advances in space research,* 1983, 2(12), p.3-11, 14 refs.
DLC QB495.A38
Ablation, Ice sheets, Ice creep, Rheology, Antarctica—Victoria Land.
The antarctic meteorites are distributed on the blue-ice area surfaces in the ablation zone of the antarctic ice-sheet, to where meteorites have been transported by the ice-flow within the ice-sheet from the wider accumulation zone. Among the antarctic meteorite collection H- and L-chondrites are most abundant. Several new types of stony meteorites have been discovered from the antarctic meteorite collection. The mass and shape of antarctic meteorites are in agreement with those of resultant fragments of high speed impact basaltic rocks. In Antarctica, small fragments of meteorite smaller than 1 kg in weight can easily be found and collected. The solidification and the gas retention ages of antarctic meteorites are concentrated around 4.5 billion years, but some of them are considerably younger. Their cosmic-ray exposure ages are extended up to 9 million years and their terrestrial ages are 90,000-700,000 years. (Auth.)

39-3871
Paleoclimates in southern Africa.
Lewin, R., *Science,* March 15, 1985, 227(4692), p.1325-1327, 1 ref.
Glaciation, Paleoclimatology.
Studies are reviewed on the influence of antarctic ice on the African climate history and its biotic evolution. The suggestion is made that within the next few years direct evidence on the configuration of antarctic ice might be obtained which will allow the construction of a mathematical climatic model able to predict climatic conditions prevailing in the Southern Hemisphere at chosen periods.

39-3872
Transportation and installation of large blocks under West Siberian conditions. [Transportirovka i montazh krupnykh blokov v usloviiakh Zapadnoĭ Sibiri],
Rastorguev, G.A., et al, *Mekhanizatsiia stroitel'stva,* June 1985, No.6, p.13-15, In Russian.
Zinov'ev, G.V.
Modular construction, Prefabrication, Transportation, Tractors, Air cushion vehicles.

39-3873
Winter construction related to land reclamation. [Meliorativnoe stroitel'stvo v zimniĭ period], *Mekhanizatsiia stroitel'stva,* June 1985, No.6, p.26-28, In Russian.
Land reclamation, Cold weather construction, Construction equipment, Earthwork, Subsurface drainage, Channels (waterways), Pipelines.

39-3874
Roadbed construction schemes based on forecasting the moisture of cohesive soils. [Vybor skhem sooruzheniia zemlianogo polotna na osnove prognoza vlazhnosti sviaznykh gruntov],
Tkachenko, V.IA., et al, *Transportnoe stroitel'stvo,* June 1985, No.6, p.7-8, In Russian.
Kormanovskiĭ, G.P.
Earthwork, Roadbeds, Soil water migration, Cohesion, Clay soils, Loams, Paludification.

39-3875
Classification of soils according to the difficulty of their removal by single-bucket loaders. [Gruppirovka gruntov po trudnosti vyemki odnokovshovymi pogruzchikami],
Maslov, V.A., et al, *Transportnoe stroitel'stvo,* June 1985, No.6, p.8-10, In Russian. 2 refs.
Earthwork, Organic soils, Peat, Earth fills, Soils, Soil freezing, Frozen fines, Loess, Classifications.

39-3876
Concrete used in construction of the Baykal tunnel. [Beton Baĭkal'skogo tonneliia],
Kasapov, R.I., et al, *Transportnoe stroitel'stvo,* June 1985, No.6, p.17-19, In Russian.
Koretskiĭ, V.P., Kogan, V.Z.
Railroad tunnels, Winter concreting, Concrete admixtures, Tunneling (excavation), Frost action, Frost resistance, Concrete aggregates, Concrete admixtures.

39-3877
Application of thermopiles. [O primenenii termosvaĭ],
Kazakov, V.P., *Transportnoe stroitel'stvo,* June 1985, No.6, p.22-23, In Russian. 11 refs.
Permafrost beneath structures, Permafrost control, Thermopiles.

39-3878
Mobile complex of equipment for small construction jobs. [Mobil'nyĭ kompleks maloĭ mekhanizatsiiĭ, *Transportnoe stroitel'stvo,* June 1985, No.6, p.30-31, In Russian.
Mixers, Geocryology, Construction equipment, Bridges, Concretes, Transportation, Research projects, Tractors, Cranes.

39-3879
Large bridges of Siberia. [Bol'shie mosty Sibiri],
Bypov, I.G., *Transportnoe stroitel'stvo,* June 1985, No.6, p.59-60, In Russian. 5 refs.
Reinforced concretes, Bridges, Prefabrication, Permafrost beneath structures, Permafrost beneath rivers, Piers.

39-3880
Surface wave reflection from periodic inhomogeneities at a liquid-solid interface. [Otrazhenie poverkhnostnoĭ volny ot periodicheskikh neronostei na granitse zhidkost'-tverdoe telo],
Lapin, A.D., *Akusticheskiĭ zhurnal,* 1978, 24(3), p.376-382, In Russian. 3 refs.
Wave propagation, Liquid solid interfaces, Acoustics, Reflection, Dispersions, Attenuation, Ice bottom surface, Roughness coefficient.

39-3881
Reciprocal conversion of surface and bulk acoustic waves at periodic corrugations and inhomogeneities of the boundary of a solid (review).
Lapin, A.D., *Soviet physics. Acoustics,* Mar.-Apr. 1983, 29(2), p.123-134, Translated from Akusticheskiĭ zhurnal. 114 refs.
Radio echo soundings, Acoustics, Wave propagation, Scattering, Liquid solid interfaces.

39-3882
Complex ice-crystal halo phenomena: sky archaeology.
Greenler, R.G., et al, *Weather,* Dec. 1980, 35(12), p.346-353, 11 refs.
Mallmann, A.J., Mueller, J.R.
Ice crystal structure, Ice crystal optics, Cloud physics, Antarctica—Amundsen-Scott Station.
We have developed a computer-simulation technique and used it to investigate the origins of many optical sky effects that result from the reflection and refraction of sunlight by airborne crystals. Using the results of these investigations we now consider two complex displays that are made up of many arcs and haloes. The first has been recorded in a modern photograph. We will try to simulate the effects in that photograph as a test of our procedure. The second complex display was described in a sketch made by Tobias Lowitz in 1790, perhaps the most famous of such recorded displays. (Auth.)

39-3883
Periglacial talus slopes. Geomorphological studies on Spitzbergen and in northern Scandinavia.
Jahn, A., *Polar geography and geology,* July-Sep. 1984, 8(3), p.177-193, Translation of Akademie der Wissenschaften in Göttingen, Mathematisch-Physikalische Klasse, Adhandlungen, 3rd S. No.35:182-198, 1983. 25 refs.
Periglacial processes, Talus, Slope processes, Norway.

39-3884
Glaciation of the continental shelves (Part 1).
Grosval'd, M.G., *Polar geography and geology*, July-Sep. 1984 [9(3)] p.194-258, Translation of Oledenenie kontinental'nykh shel'fov. Itogi nauki i tekhniki, Seriia Paleogeografiia. Moscow, VINITI, 1983, p.3-72. 198 refs.
Ice sheets, Glaciation, Ice shelves, Continental shelves.
This study represents an overview of the current state of knowledge of "marine" ice sheets, resting on the continental shelves. This first part provides a survey of all such ice sheets during the Würm glaciation, in which the author examines the available evidence of the extent and thickness of such ice sheets. Particular attention is focused on the Antarctic Ice Sheet since not only were its "marine" components more extensive during the Würm, but since the West Antarctic Ice Sheet at the present time provides valuable evidence of how such components must have behaved elsewhere during the Pleistocene. (Auth. mod.)

39-3885
Pockmark field in the central Barents Sea: gas from a petrogenic source.
Solheim, A., et al, *Polar research*, Feb. 1985, 3(1), p.11-19, 36 refs.
Elverhöi, A.
Bottom topography, Sediments, Gases, Petrogenesis, Barents Sea.

39-3886
Unsolved problems of creep.
Weertman, J., *Nature*, Mar. 21, 1985, 314(6008), p.227, 12 refs.
Rheology, Ice creep, Shear stress, Thermal stresses.

39-3887
Flow law of ice in polar ice sheets.
Doake, C.S.M., et al, *Nature*, Mar. 21, 1985, 314(6008), p.255-257, 17 refs.
Wolff, E.W.
Glacier flow, Ice creep, Ice mechanics, Ice shelves, Shear stress, Strains.
Theories of glacier flow are based commonly on the assumption that ice is not a newtonian fluid, but has a non-linear stress-dependent viscosity. Here we re-examine the spreading of Antarctic ice shelves and suggest that the data cannot define a unique flow law. Tilt measurements in four boreholes in both the Arctic and Antarctic seem to show that a different linear flow law may be just as appropriate for describing the flow of polar ice sheets. This different flow law is given and explained. (Auth.)

39-3888
Lake Untersee, a first isotope study of the largest freshwater lake in the interior of East Antarctica.
Hermichen, W.-D., et al, *Nature*, May 9, 1985, 315(6015), p.131-133, 29 refs.
Kowski, P., Wand, U.
Isotope analysis, Lake water, Lake ice, Antarctica—Unter-See, Lake.
Described are hydrological studies on the largest freswater lake of interior Antarctica, Lake Untersee. The studies show that the lake formed from a melt-water pond during climatic optimum periods in the Holocene. At present, the lake is thermally, hydrogeochemically and isotopically homogeneous because of thermal convection during the austral summer. Lake Untersee is fed throughout the year by underwater melting of the adjoining glacier ice. Isotope data suggest a permanent ice cover during its existence. The drainless lake is constantly losing water through sublimation at the surface of the more than 2.5-m-thick ice cover. The salt content suggests that the present water body is the remainder of an amount of melt water at least 50 times as great. (Auth.)

39-3889
Secular climate change in old growth tree-line vegetation of northern Quebec.
Payette, S., et al, *Nature*, May 9, 1985, 315(6015), p.125-138, 15 refs.
Filion, L., Gauthier, L., Boutin, Y.
Trees (plants), Vegetation patterns, Climatic changes, Frost penetration.

39-3890
Does the ocean-atmosphere system have more than one stable mode of operation.
Broecker, W.S., et al, *Nature*, May 2, 1985, 315(6014), p.21-26, 56 refs.
Peteet, D.M., Rind, D.
Ice cores, Climatic changes, Isotope analysis, Carbon dioxide, Sea water.
The climate record obtained from two long Greenland ice cores reveals several brief climate oscillations during glacial time. The most recent of these oscillations, also found in continental pollen records, has greatest impact in the area under the meteorological influence of the northern Atlantic, but none in the United States. This suggests that these oscillations are caused by fluctuations in the formation rate of deep water in the northern Atlantic. As the present production of deep water in this area is driven by an excess of evaporation over precipitation and continental runoff, atmospheric water transport may be an important element in climate change. Changes in the production rate of deep water in this sector of the ocean may push the climate system from one quasi-stable mode of operation to another. The antarctic record from a Byrd Station core is compared with the Greenland core for most of these parameters. (Auth. mod.)

39-3891
Evidence from polar ice cores for the increase of atmospheric CO2 in the past two centuries.
Neftel, A., et al, *Nature*, May 2, 1985, 315(6014), p.45-47, 13 refs.
Moor, E., Oeschger, H., Stauffer, B.
Ice cores, Carbon dioxide, Atmospheric composition, Antarctica—Siple Station.
Precise and continuous measurements of atmospheric CO2 concentration were first begun in 1958 and show a clear increase from 315 parts per million by volume (ppmv) then to 345 ppmv now. A detailed knowledge of the CO2 increase since preindustrial time is a prerequisite for understanding several aspects of the role of CO2. The most reliable assessment of the ancient atmospheric CO2 concentration is derived from measurements of air occluded in ice cores. An ice core from Siple Station (West Antarctica) that allows determination of the enclosed gas concentration with very good time resolution has recently become available. We report here measurements of this core which now allow us to trace the development of the atmospheric CO2 from a period overlapping the Mauna Loa record back over the past two centuries. (Auth.)

39-3892
Antarctic ice core reveals atmospheric CO2 variations over the past few centuries.
Raynaud, D., et al, *Nature*, May 23, 1985, 315(6017), p.309-311, 10 refs.
Barnola, J.M.
Atmospheric composition, Carbon dioxide, Ice cores, Antarctica—East Antarctica.
By analysing the air extracted from the bubbles found in the ice, it is possible to determine the air composition and thus its CO2 content for the period during which the air was trapped. We provide here the most direct evidence obtained so far for the background atmospheric CO2 concentrations over the centuries preceding the recent anthropogenic perturbation due to the industrial revolution of the past century. This background level is important for assessing both the origin and the climatic response of the anthropogenic perturbation to the atmospheric CO2. Our results, obtained from an Antarctic ice core, indicate that the background level could have been as low as 260 ppmv before the major anthropogenic influence and suggest that the so-called 'pre-industrial' CO2 level was not constant over the few hundred years preceding the nineteenth century. (Auth.)

39-3893
Summer water budget and its importance in the alpine tundra of Colorado.
Greenland, D., et al, *Physical geography*, Sep.-Dec. 1984, 5(3), p.221-239, 27 refs.
Caine, N., Pollak, O.
Alpine tundra, Water supply, Snow cover effect, Hydrology, Soil water, Ecosystems, Evapotranspiration, Precipitation (meteorology), United States—Colorado.

39-3894
Influence of urban ice and snow control without salt on traffic safety and flow. Part 1: Skidding coefficients on lanes after spraying mineral material against snow and ice. [Einfluss eines streusalzlosen Strassenwinterdienstes in Städten auf Verkehrssicherheit und Verkehrsablauf. Teil 1. Zum Kraftschlussangebot auf winterlichen Fahrbahnen bei Verwendung mineralischer Streustoffe],
Hoffmann, G., et al, *Strasse und Autobahn*, Apr. 1985, 36(4), p.139-146, In German. 10 refs.
Dames, J., Bergmann, J.
Ice control, Ice removal, Snow removal, Skid resistance, Chemical ice prevention, Safety, Road maintenance.

39-3895
Influence of urban ice and snow control without salt on traffic safety and flow. Part 2: Behavior of drivers on city main streets in winter. [Einfluss eines streusalzlosen Strassenwinterdienstes in Städten auf Verkehrssicherheit und Verkehrsablauf. Teil 2: Zum Fahrverhalten auf winterlichen städtischen Hauptverkehrsstrassen],
Hoffmann, G., et al, *Strasse und Autobahn*, May 1985, 36(5), p.205-210, In German. 5 refs.
Gast, J.
Ice control, Road maintenance, Ice removal, Snow removal, Safety, Winter maintenance, Trafficability.

39-3896
MIZLANT 84 data report results of an oceanographic cruise to the Greenland Sea, August-September 1984.
Bourke, R.H., et al, *U.S. Navy. Naval Postgraduate School, Monterey, California. Report*, May 1985, NPS 68-85-018, 28p. + charts, 1 ref.
Paquette, R.G.
Sea ice distribution, Ice conditions, Ocean currents, Icebreakers, Weather stations, Ice edge, Oceanographic surveys, Salinity, Water temperature, Greenland Sea.

39-3897
Beaufort Sea, Mackenzie Delta, Mackenzie Valley, and northern Yukon: a bibliographical review.
Goodwin, C.R., ed, Calgary, Alta., University, Arctic Science and Technology Information System, Aug. 1984, 310p.
Howard, L.M., ed.
Glaciology, Climatology, Permafrost, Geomorphology, Engineering, Bibliographies.

39-3898
Density functional theory of freezing: results and high-density artifacts.
Haymet, A.D.J., *Journal of physical chemistry*, Mar. 14, 1985, 89(6), p.887-889, 23 refs.
Freezing, Density (mass/volume), Liquid solid interfaces, Theories.

39-3899
SNOW-ONE-A and B characterization measurements and data analysis.
Berthel, R.O., et al, *U.S. Air Force Geophysics Laboratory. Technical report*, Sep. 20, 1983, AFGL-TR-83-0256, Environmental research papers, No.855, 60p., ADA-141 245, 28 refs.
Plank, V.G., Main, B.A.
Snowfall, Snow crystal structure, Snowflakes, Falling bodies, Velocity, Unfrozen water content, Precipitation (meteorology).

39-3900
Research objectives and publications of the C.N.R.S., Center for Geomorphology, Caen. [Thèmes de recherche et publications au Centre de géomorphologie du C.N.R.S., Caen],
Lautridou, J.P., *Centre de géomorphologie. Lettre d'information*, Jan. 1985, No.5, 3p. + 7p. of bibliography, In French.
Glaciology, Geomorphology, Research projects, Laboratories, Publications, Bibliographies.

39-3901
Microwave monitoring of aviation icing clouds.
Gary, B.L., *U.S. Air Force Geophysics Laboratory. Technical report*, Nov. 11, 1983, AFGL-TR-83-0271, 22p., ADA-137 910, 12 refs.
Aircraft icing, Supercooled clouds, Remote sensing, Microwaves, Radiometry, Temperature profiles, Unfrozen water content, Cloud physics, Altitude, Air temperature.

39-3902
Full-cycle heating and cooling probe method for measuring thermal conductivity.
McGaw, R.W., *Journal of heat transfer*, [1984], No.84-WA/HT-109, MP 1891, 8p., 32 refs.
Thermal conductivity, Cooling, Heating, Thermal diffusion, Analysis (mathematics), Tests.
A modification of the traditional probe test procedure is described which incorporates the cooling stage that succeeds each heating stage. The improved procedure enables a second value of thermal conductivity to be determined for each test. A comparison between the two values gives a measure of the experimental error for the test, and provides a means by which physical changes within the test specimen may be detected. If the ambient test temperature of the specimen has altered during a test, the effect on the test values may also be determined through a comparison of the heating-stage and cooling-stage temperatures.

39-3903
Automated soils freezing test.
Chamberlain, E.J., MP 1892, National Conference on Microcomputers in Civil Engineering, 2nd, Orlando, Florida, Oct. 30-Nov. 1, 1984. Proceedings. Edited by W.E. Carroll, [1985], 5p., 2 refs.
Soil freezing, Freeze thaw cycles, Frost heave, Freeze thaw tests, Thermocouples, Computer programs.
An inexpensive data acquisition/control system is used to control the freeze-thaw cycling and data logging in a new laboratory freezing test. The test imposes two freeze-thaw cycles on four soil samples. The data logger is set up with 3-10 channel multiplexer cards for analog measurement and actuator control. Two of the multiplexer cards are configured for a total of 36 single-ended thermocouple measurements which are accurate to plus or minus 0.1 C. The third multiplexer card is configured with two actuator switches to control the temperatures of two refrigerated circulating baths and with five double-ended channels to read the output of four linear motion DC transformers and one power supply. The data acquisition/control unit is controlled using a HP41CX hand-held calculator and the HP-IL serial interface loop. A thermal printer, tape cassette deck and x-y plotter are used to print out, store and plot the test data. The calculator is programmed with over 30 programs and subroutines to control the temperature, and to reduce, print out, store and plot the test data.

39-3904
Dalton Highway: characterization of foundation soils.
Vita, C.L., et al, *U.S. Federal Highway Administration. Report*, Sep. 1984, AK-RD-85-28, 30p. + appends., 31 refs.
Rooney, J.W., Riddle, C.H., Acomb, L.J.
Permafrost beneath roads, Roadbeds, Settlement (structural), Freeze thaw cycles, Strains, Landforms, Erosion.

39-3905
Ice cores and snow.
Alderton, D.H.M., et al, *London. University. Monitoring and Assessment Centre. Technical report*, Mar. 1985, No.31, p.97-153, Refs. p.148-153.
Coleman, D.O.
Atmospheric composition, Air pollution, Polar regions, Ice cores, Snow composition.
With regard to atmospheric pollution in Antarctica there have been almost no long-term increases. This is generally ascribed to the remoteness of the continent and the barrier presented by meteorological conditions at the equator. The origin of those metals which are in the atmosphere is thought to be natural. In the Arctic regions, rises in concentrations of atmospheric pollutants seem to be lacking, with most maintaining generally historical profiles. Since there is clear evidence that heavily polluted aerosols are a common feature of the Arctic, these trends need to be checked using more careful sampling and analysis procedures to determine if the trends are valid. (Auth. mod.)

39-3906
Possible precipitation of ice at low latitudes of Mars during periods of high obliquity.
Jakosky, B.M., et al, *Nature*, June 13, 1985, 315(6020), p.559-561, 28 refs.
Carr, M.H.
Mars (planet), Extraterrestrial ice, Ice sublimation.

39-3907
Lattice statistics model for the age distribution of air bubbles in ice.
Enting, I.G., *Nature*, June 20, 1985, 315(6021), p.654-655, 20 refs.
Ice sheets, Bubbles, Carbon dioxide, Lattice models.

39-3908
Experimental rheology of clay soils. [Eksperimental'naia reologiia glinistykh gruntov],
Meschian, S.R., Moscow, Nedra, 1985, 342p., In Russian with abridged English table of contents enclosed. 41 refs.
Fines, Buildings, Clay soils, Loess, Foundations, Loams, Hydraulic structures, Embankments, Soil physics, Soil strength, Soil creep, Deformations, Thixotropy, Slope processes.

39-3909
Microorganisms in processes of gleying clay soils. [Mikroorganizmy v protsessakh ogleeniia glinistykh gruntov],
Bolotina, I.N., et al, *Inzhenernaia geologiia*, May-June 1985, No.3, p.32-38, In Russian. 10 refs.
Bolatbekova, K.S.
Clay soils, Soil microbiology, Soil formation, Soil composition, Soil chemistry.

39-3910
Numerical prediction of loess sagging under natural loads. [Raschetnyĭ prognoz prosadochnykh deformatsiĭ lessovykh porod v usloviiakh prirodnogo zagruzheniia],
Varinichenko, G.M., *Inzhenernaia geologiia*, May-June 1985, No.3, p.39-44, In Russian. 3 refs.
Loess, Foundations, Clay soils, Settlement (structural), Forecasting.

39-3911
Engineering and geological characteristics of loess related to post-settlement compaction. [Inzhenerno-geologicheskaia kharakteristika lessovykh gruntov v sviazi s posleprosadochnym uplotneniem],
Skvaletskiĭ, E.N., *Inzhenernaia geologiia*, May-June 1985, No.3, p.45-54, In Russian. 12 refs.
Clay soils, Loess, Soil water migration, Settlement (structural), Creep, Soil compaction.

39-3912
Two-dimensional mathematical model of frost fracturing and its application in forecasting. [Dvumernaia matematicheskaia model' kriogennogo rastreskivaniia i ee primenenie v praktike prognoza],
Gevorkian, S.G., *Inzhenernaia geologiia*, May-June 1985, No.3, p.55-64, In Russian. 29 refs.
Frost shattering, Polygonal topography, Geocryology, Mathematical models.

39-3913
Regionalization of the northern part of the West Siberian plate according to engineering and geological peculiarities of peat masses. [Raionirovanie severa Zapadno-Sibirskoĭ plity po inzhenerno-geologicheskim osobennostiam torfianykh massivov],
Kashperiuk, P.I., et al, *Inzhenernaia geologiia*, May-June 1985, No.3, p.88-94, In Russian. 6 refs.
Trofimov, V.T.
Mapping, Plains, Paludification, Permafrost distribution, Organic soils, Swamps, Peat, Engineering geology.

39-3914
Using tritium analysis in geocryological studies. [Primenenie tritievogo analiza pri geokriologicheskikh issledovaniiakh],
Chizhov, A.B., et al, *Inzhenernaia geologiia*, May-June 1985, No.3, p.106-114, In Russian. 7 refs.
Permafrost structure, Ice formation, Geocryology, Soil freezing, Moisture transfer, Isotope analysis, Permafrost hydrology, Ice veins, Ice composition.

39-3915
Major safety provisions in nuclear-powered ships.
Khlopkin, N.A., et al, *Soviet atomic energy*, Dec. 1984 (Pub. June 85), 57(6), p.803-806, Translated from Atomnaia energiia. 4 refs.
Icebreakers, Ships, Nuclear power, Design, Ice navigation.

39-3916
Oscillations in the concentration of artificial radionuclides in the waters of the Baltic and North seas in 1977-1982.
Styro, D.B., et al, *Soviet atomic energy*, Dec. 1984 (Pub. June 85), 57(6), p.835-838, Translated from Atomnaia energiia. 20 refs.
Kadzhene, G.I., Kleiza, I.V., Lukinskene, M.V.
Sea water, Water pollution, Air pollution, Radioactive wastes, Fallout.

39-3917
Penetration of radioactive industrial waters from the North Sea into central regions of the Baltic.
Vakulovskiĭ, S.M., et al, *Soviet atomic energy*, Sep. 1984 (pub. Mar.85), 57(3), p.631-633, Translated from Atomnaia energiia. 9 refs.
Nikitin, A.I.
Water pollution, Radioactive wastes, Sea water, Nuclear power.

39-3918
Winter maintenance of roads during considerable snowdrifting. [Osobennosti zimnego soderzhaniia dorog pri znachitel'nom snegoperenose],
Filippov, I.V., *Avtomobil'nye dorogi*, Oct. 1983, No.10, p.10-12, In Russian. 2 refs.
Snowdrifts, Embankments, Snow removal, Roads, Design, Winter maintenance.

39-3919
Determining the depth of snow cover when calculating height of embankments which will remain free of drifting snow. [Opredelenie vysoty snezhnogo pokrova pri raschetakh nezanosimosti nasypeĭ],
Bialobzheskiĭ, G.V., *Avtomobil'nye dorogi*, Oct.1983, No.10, p.14-16, In Russian.
Roadbeds, Embankments, Snowdrifts, Snow depth.

39-3920
Construction of frost-heave preventing layers of nonconditioned sands. [Ustroĭstvo morozozashchitnykh sloev iz nekonditsionnykh peskov],
Ruvinskiĭ, V.I., et al, *Avtomobil'nye dorogi*, Dec. 1983, No.12, p.16-17, In Russian.
Sidiakov, V.A., Mosin, V.N.
Sands, Roadbeds, Frost heave, Water content, Seepage, Frost penetration.

39-3921
Improving the resistance of soils to frost heave. [Uluchshenie protivopuchinnykh svoĭstv gruntov],
Khabibullina, E.N., *Avtomobil'nye dorogi*, Dec. 1983, No.12, p.18-19, In Russian. 3 refs.
Roadbeds, Frost heave, Frost penetration, Soil composition, Admixtures, Chemical composition.

39-3922
Cold Weather Transit Technology Program. Volume 12: Study of laser deicing.
Gajda, W.J., *U.S. Urban Mass Transportation Administration. Report*, Nov. 1983, UMTA-IN-06-0009-83-12, 40p., PB84-192 400, 5 refs.
Ice prevention, Lasers, Electromagnetic properties, Railroads, Ice melting, Snow melting, Ice solid interface.

39-3923
Cold Weather Transit Technology Program. Volume 13: Microwave coupling to ice/metal structures.
Kwor, R.Y.C., et al, *U.S. Urban Mass Transportation Administration. Report*, Aug. 1983, UMTA-IN-06-0009-83-13, 58p., PB83-263 178, 7 refs.
Larkin, M., Ajmera, P.K.
Ice prevention, Microwaves, Ice solid interface, Ice melting, Railroads, Radiation absorption, Ice adhesion, Thermocouples, Temperature variations.

39-3924
Hydrogen evolution in liquid and frozen aqueous electrolyte.
Frese, U., et al, *Journal of physical chemistry*, Mar. 28, 1985, 89(7), p.1059-1062, 17 refs.
Iwasita, T., Schmickler, W.
Frozen liquids. Solutions, Hydrogen, Ions, Electrical properties, Chemical properties, Temperature effects.

39-3925
Unidirectional freezing of binary aqueous solutions: an analysis of transient diffusion of heat and mass.
Wollhöver, K., et al, *International journal of heat and mass transfer*, Apr. 1985, 28(4), p.761-769, With French, German and Russian summaries. 51 refs.
Körber, C., Scheiwe, M.W., Hartmann, U.
Freezing, Solutions, Heat transfer, Mass transfer, Thermodynamics, Boundary value problems, Thermal diffusion, Phase transformations, Mathematical models.

39-3926
Designs created to support Alaskan offshore exploration. *Offshore*, June 1985, 45(6), p.97-98.
Ice navigation, Icebreakers, Marine transportation, Exploration, Natural resources, Design.

39-3927
Study of periglacial processes in the Peruvian high Andes: preliminary data. [Données préliminaires pour l'étude des processus périglaciaires dans les hautes Andes du Pérou],
Francou, B., *Revue de géomorphologie dynamique*, 1984, 23(4), p.113-126, In French with English summary. 15 refs.
Periglacial processes, Alpine glaciation, Runoff, Slope processes, Meltwater, Freeze thaw cycles, Cryoturbation, Snow melting, Geomorphology, Peru—Andes.

39-3928
Electrical soundings of some rock glaciers and moraines in the southern Alps of France. [Sondages électriques sur quelques glaciers rocheux et moraines des Alpes du Sud (France
Evin, M., *Revue de géomorphologie dynamique*, 1984, 23(4), p.127-137, In French with English summary. 15 refs.
Rock glaciers, Permafrost, Electrical resistivity, Moraines, Glacier flow, Geomorphology.

39-3929
Experiments on aerosol scavenging by natural snow crystals. Parts 1 & 2.
Murakami, M., et al, *Meteorological Society of Japan. Journal*, Feb. 1985, 63(1), p.119-135, With Japanese summaries. 26 refs.
Kikuchi, K., Magono, C.
Snow crystal structure, Aerosols, Adhesion, Particles, Grain size, Experimentation.

39-3930
Characterization of snow by acoustic sounding: a feasibility study.
Lee, S.M., et al, *Journal of sound and vibration*, Mar. 22, 1985, 99(2), p.247-266, 32 refs.
Rogers, J.C.
Snow acoustics, Echo sounding, Snow density, Porosity, Velocity, Temperature effects, Snow cover, Acoustic scattering, Porous materials.

39-3931
Quaternary environments: eastern Canadian Arctic, Baffin Bay and western Greenland.
Andrews, J.T., ed. Boston, Allen & Unwin, 1985, 774p. Refs passim. For selected papers see 39-3932 through 39-3936.
Quaternary deposits, Glacial erosion, Moraines, Geomorphology, Glaciation, Paleoclimatology, Climatic changes, Weathering, Soil formation, Geology, Canada, Greenland.

39-3932
Environmental background.
Jacobs, J.D., et al, Quaternary environments: eastern Canadian Arctic, Baffin Bay and western Greenland. Edited by J.T. Andrews, Boston, Allen & Unwin, 1985, p.26-68, Refs. p.60-68.
Andrews, J.T., Funder, S.
Glaciology, Oceanography, Glaciation, Paleoclimatology, Quaternary deposits, Sea ice distribution, Glacier mass balance, Climate, Geology, Canada.

39-3933
Patterns of glacial erosion across the eastern Canadian Arctic.
Andrews, J.T., et al, Quaternary environments: eastern Canadian Arctic, Baffin Bay and western Greenland. Edited by J.T. Andrews, Boston, Allen & Unwin, 1985, p.69-92, Refs. p.90-92.
Clark, P., Stravers, J.A.
Glacial erosion, Paleoclimatology, Landforms, Glacier flow, Quaternary deposits, Ice temperature, Canada.

39-3934
Grain-size characteristics of quaternary sediments, Baffin Island region.
Andrews, J.T., Quaternary environments: eastern Canadian Arctic, Baffin Bay and western Greenland. Edited by J.T. Andrews, Boston, Allen & Unwin, 1985, p.124-153, Refs. p.149-153.
Quaternary deposits, Grain size, Glacial deposits, Sedimentation, Sediments, Canada—Northwest Territories—Baffin Island.

39-3935
Devon Island ice core and the glacial record.
Koerner, R.M., et al, Quaternary environments: eastern Canadian Arctic, Baffin Bay and western Greenland. Edited by J.T. Andrews, Boston, Allen & Unwin, 1985, p.309-327, Refs. p.324-327.
Fisher, D.A.
Ice cores, Climatic changes, Glacier mass balance, Glacial geology, Oxygen isotopes, Paleoclimatology, Canada—Northwest Territories—Devon Island.

39-3936
Weathering and soil development on Baffin Island.
Locke, W.W., III, Quaternary environments: eastern Canadian Arctic, Baffin Bay and western Greenland. Edited by J.T. Andrews, Boston, Allen & Unwin, 1985, p.331-353, Refs. p.350-353.
Weathering, Soil formation, Glaciation, Geomorphology, Stratigraphy, Paleoclimatology, Glacial geology, Isotope analysis, Pleistocene, Canada—Northwest Territories—Baffin Island.

39-3937
Heat loss factors for insulated building foundations.
Zarling, J.P., et al, *U.S. Federal Highway Administration. Report,* May 1984, AK-RD-85-03, 65p., 5 refs.
Braley, W.A.
Heat loss, Buildings, Foundations, Thermal regime, Snow cover effect, Thermal insulation, Meteorological factors, Soil composition, Frost heave, Countermeasures, United States—Alaska.

39-3938
Proceedings of the second meeting. [Actas, segunda reunion],
Grupo periglacial argentino, *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, 249p., In Spanish with English summaries. Refs. passim. For selected papers see 39-3939 through 39-3950, or B-32101, E-32099, E-32100 and I-32101.
Corte, A., ed.
Geocryology, Periglacial processes, Permafrost, Geomorphology, Snowfall, Tundra, Mountains, Meetings.
This is a collection of papers presented at the 2nd meeting of the Grupo Periglacial Argentino, dealing with periglacial processes in the southern part of the South American continent, the Subantarctic islands, and Antarctica.

39-3939
Evidence of ice wedge fossils in southern Mendoza Province. [Evidencias de cuñas de hielo fósiles en el sur de la provincia de Mendoza],
Abraham de Vazquez, E.M., et al, *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.3-11, 11 refs., In Spanish with English summary.
Garleff, K.
Ice wedges, Fossil ice, Mountains, Sediments, Argentina—Mendoza.

39-3940
Symbols for a geocryogenic inventory. [Simbolos para un inventario geocriogénico],
Ahumada, A.L., *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.12-18, In Spanish, 19 refs., In Spanish with English summary.
Geocryology, Permafrost, Geomorphology, Terminology.

39-3941
Morphometric analysis of the stone run Andersson, Falkland Islands. [Análisis morfométrico del río de piedra Andersson, Islas Malvinas, Argentina],
Bellosi, E.S., et al, *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.19-36, Refs. p.32-34., In Spanish with English summary.
Jalfin, G.A.
Rock streams, Rock glaciers, Periglacial processes, Falkland Islands.
The Andersson stone run is situated on the east side of Azul Mountain, south slope of Rivadavia Heights (51 45 S—58 47 W), on Soledad I. It is one of the largest in the island, measuring 5,500 m in length and 1,400 m in width. The external morphological characteristics of the run are divided into three sections, according to the source of the supply of debris. All stones come from the quartzite of Stanley Formation, which shows a squeezed folding and prominent jointing perpendicular to the flow. In more than 430 surface clasts the textural properties—mean size, sphericity, flatness, F factor, roundness, shape and orientation—were analyzed. (Auth. mod.)

39-3942
Thermal contraction polygons in the seasonally freezing cover of Rio Gallegos, South Patagonia, latitude 52 S, with a mean annual temperature of 7 C. [Polígonos de contracción térmica en la capa de congelamiento estacional en Río Gallegos, Patagonia Sud, 52 deg. L.S. con una temperatura media anual de 7 C],
Bustos, R., et al, *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.39-46, 4 refs., In Spanish with English summary.
Corte, A.E.
Polygonal topography, Seasonal freeze thaw, Thermal regime, Topographic features, Fossils, Temperature effects, Argentina—Patagonia.

39-3943
Age of cryogenic structures of Puetro Madryn, Chubut, Argentina. [Edad de las estructuras geocriogénicas de Puerto Madryn, Chubut, Argentina],
Corte, A.E., et al, *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.66-72, 18 refs., In Spanish with English summary.
Beltramone, C.
Permafrost distribution, Geocryology, Paleoclimatology, Ice wedges, Active layer, Argentina—Patagonia.

39-3944
Presence of a salty sheet trapped under the permafrost of Seymour Island, northeast of the Antarctic Peninsula. [Présence d'une nappe captive salée sous le permafrost de l'île Seymour située au nord-est de la Peninsule Antarctique],
Fournier, H., et al, *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.83-85, In French and Spanish. 5 refs.
Corte, A., Gasco, J.C., Moyano, C.E.
Permafrost, Sounding, Seymour Island.
Geocryogenic investigations at Marambio Station are reported which involve soundings of a first layer of permafrost 255 m thick, and a second, highly conductive, layer 16 m thick under it, considered to be a salty sheet indicative of the development of permafrost in Marambio.

39-3945
Hydrology of mountain peat bogs as cryogenic structures in the Puna and eastern Cordillera region. [Comportamiento hidrológico de las turberas de montaña como estructuras criogénicas en las regiones de Puna y Cordillera Oriental],
Igarzábal, A.P., *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.106-115, 5 refs., In Spanish with English summary.
Swamps, Peat, Permafrost hydrology, Frost action, Water supply, Mountains, Argentina—Puna.

39-3946
Solid precipitation regime in Argentina and Antarctica. [Régimen de precipitación sólida en la República Argentina y Antártida],
Minetti, J.L., *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.116-128, 11 refs., In Spanish with English summary.
Climate, Snowfall, Hail.
The spatial and lati-altitudinal distribution of solid precipitation in Argentina and the Antarctic region is presented; the seasonal and annual frequency of snow and hail is considered for the period 1964-70. It is stipulated that such data are of fundamental importance for the understanding of the balance of glaciers and of the processes related to geocryogenic activity. (Auth. mod.)

39-3947
Latitudinal and altitudinal climatic zonation in the Andes and its relation to the lower limit of perennial ice and the geocriogenic lower limit. [Zonificación latialtitudinal del clima en la zona andina y su relación con el límite inferior del hielo perenne (LIHP) y del límite inferior geocriogénico (LIG)],
Minetti, J.L., et al, *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.129-143, 16 refs., In Spanish with English summary.
Corte, A.E.
Permafrost distribution, Geocryology, Mountain glaciers, Snow cover distribution, Periglacial processes.

39-3948
Mendoza's mountain soils: geocryogenic and edaphic aspects. [Suelos de montaña de Mendoza: aspectos geocriogénicos y edafológicos],
Regairaz, M.C., *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.162-173, 11 refs., In Spanish with English summary.
Permafrost, Geomorphology, Seasonal freeze thaw, Ecology, Geocryology, Water balance, Soil freezing, Mountains, Argentina—Mendoza.

39-3949
Argentine and Chilean tundra between parallels 51 and 56 S. [La tundra argentino-chilena entre los paralelos 51 y 56 de latitud sur],
Roig, F.A., *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.174-196, Refs. p.189-191., In Spanish with English summary.
Tundra, South Georgia, Falkland Islands.
A general review of the tundra plant communities, between parallels 51 and 56 S, is given. Based on phytosociological analyses made in the Provinces of Santa Cruz (Argentina) and Última Esperanza (Chile) a comparison is made between associations living in cryogenic environments in these areas and those in Tierra del Fuego, Falkland Is., South Georgia, and Diego Ramírez. Two basic types of tundra are differenciated: one hygrophilous and the other xeric, the first corresponding to maritime and the second to continental climate. Within each of these, different associations are described. (Auth. mod.)

39-3950
Observation of geocryogenic processes in the Cordillera, southestern San Juan Province, Argentina. [Observaciones sobre procesos geocriogénicos en la Cordillera del limite al SO de la provincia de San Juan, Argentina],
Simon, W., *Instituto argentino de nivología y glaciología. Anales,* 1984, No.6, p.197-203, 3 refs., In Spanish with English summary.
Periglacial processes, Rock glaciers, Permafrost, Geocryology, Slope processes, Mountains, Argentina—San Juan Province.

39-3951
Ocean bottom during the ice age. [Dno okeana v lednikovyĭ period],
Matishov, G.G., Leningrad, Nauka, 1984, 176p., In Russian with abridged English table of contents enclosed. Refs. p.160-175.
Quaternary deposits, Ocean bottom, Ocean currents, Ocean environments, Subsea permafrost, Periglacial processes, Moraines, Land ice, Ice rafting, Paleoclimatology.

39-3952
Statistical studies of snow accumulation and snowfall in the coastal and katabatic areas of Antarctica—observations at Syowa and Mizuho Stations in 1979 and 1980.
Wada, M., *Antarctic record,* Mar. 1985, No.85, p.1-11, In English with Japanese summary. 13 refs.
Snow accumulation, Snowfall, Periodic variations, Atmospheric disturbances, Snow water content, Antarctica—Showa Station, Antarctica—Mizuho Station.
Snow accumulation at Showa and Mizuho Stations was recorded from the observations during the POLEX-South period and the monthly and seasonal variations are discussed using the cloud amount, number of days with snowfall, precipitable water, number of days with blizzard conditions and pressure variations. Accumulation generally increased in late summer, winter and October at Showa Station, and in late summer and winter at Mizuho Station. The increase in late summer relies on the content of precipitable water and the increase in winter depends on the cyclones that approached the region. The increase in October at Showa Station relies on both factors. There is a large difference in the content of precipitable water between summer and winter, so the summer season plays a more important role in snow accumulation at Mizuho Station than the winter. (Auth.)

39-3953
Biomechanical study on man's adaptation to cold—comparison of the outfit of JARE and Eskimos in heat insulation and physical activity.
Watanabe, K., et al, *Antarctic record*, Mar. 1985, No.85, p.12-23, In Japanese with English summary. 1 ref.
Terai, K.
Acclimatization, Clothing, Thermal insulation.
The heat insulation and the physical activity were tested to compare the winter clothing of the JARE with that of Greenland Eskimos. Four healthy students were chosen as subjects. In the heat insulation test, each subject's body temperature was monitored during 60 min in the cold chamber at -40 C. The condition of the bicycle ergometer exercise was 2.5 kp x 15 min. The results revealed the following: in heat insulation the Eskimo outfit excels the JARE outfit. In the physical performance test, the sportswear proves better in the "broad jump" than the JARE and Eskimo outfit. But in the seven other items of the test, the three kinds of clothing showed almost the same results, although the Eskimo outfit was a little lower in "trunk flexibility". The JARE outfit seems suitable for physical activity, but its gloves require some improvements in heat insulation so as to cope with the severe cold. (Auth.)

39-3954
Outlook of ice excavation techniques.
Suzuki, Y., *Antarctic record*, Mar. 1985, No.85, p.24-38, In Japanese with English summary. 44 refs.
Ice drills, Ice coring drills, Drilling fluids.
In earth boring it is common to circulate drilling mud in the bored hole. The two purposes of the circulation, besides removal of cuttings, are to cool cutters and to preserve the hole, which are both unimportant in ice boring. Hence, because of its light weight, a cable-suspended core drill which treats cuttings locally is preferred to a drill using the mud circulation which needs heavy equipment. The drilling time with a core drill is discussed in detail. An important problem in deep ice boring is the hole closure due to ice pressure. Technique to fill the hole with liquid to cope with the hole closure is introduced. Then, various kinds of ice drills are introduced and assessed. Included are: auger drills, rotary machines, turbo drills, dyna drills, cable-suspended electromechanical and electrothermal drills, steam drills, hot-water drills and flame-jet drills. Tunnel and trench excavations carried out in Greenland are briefly introduced. (Auth.)

39-3955
Sources, composition, and transport of suspended particulate matter in lower Cook Inlet and northwestern Shelikof Strait, Alaska.
Feely, R.A., et al, *U.S. National Oceanic and Atmospheric Administration. NOAA technical report*, Jan. 1982, ERL 415-PMEL 34, 28p., PB82-193 236, 28 refs.
Massoth, G.J.
Suspended sediments, Sediment transport, Ocean environments, Marine geology, Water chemistry, Water temperature, Estuaries, Oil spills, Chemical composition, United States—Alaska—Cook Inlet, United States—Alaska—Shelikof Strait.

39-3956
Propulsion tests in level ice on a model of a 140-ft WTGB icebreaker.
Tatinclaux, J.C., *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1985, CR 85-04, 13p., ADA-154 075, 6 refs.
Icebreakers, Ice conditions, Ice strength, Ice breaking, Ice cover thickness, Lake ice, Flexural strength, Velocity, Tests, Models.
Results of propulsion tests in level ice on a model of the WTGB 140-ft Great Lakes icebreaker are presented and compared to available full-scale data. In spite of the difficulties in exactly modeling full-scale conditions, the predictions based on the model test results of the ship performance compared reasonably well to those measured during full-scale trials. Several possible sources of errors are identified. In particular, duplication at the model scale of the ship hull's ice friction coefficient is considered to be critical in determining the ice resistance and the corresponding propulsion characteristics, namely propeller speed, thrust and torque.

39-3957
Kinetic friction coefficient of ice.
Forland, K.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1985, CR 85-06, 40p., ADA-155 035, 23 refs.
Tatinclaux, J.C.
Ice solid interface, Ice friction, Ice hardness, Surface roughness, Engineering, Velocity, Tests.
This study investigates the relative influence of various parameters on the kinetic friction coefficient between ice and different surfaces. Friction tests were performed with urea-doped, columnar ice, studying the parameters of normal pressure, velocity, type of material roughness, ice orientation, ice hardness and test configuration. Tests were conducted by pulling a sample of ice over a sheet of material and by pulling a sample of material over an ice sheet. An ambient temperature of -1.5 was maintained throughout, and the ice surface hardness was measured using a specially designed apparatus. The results of the friction tests revealed that the behavior of kinetic friction coefficient with varying velocity was significantly influenced by the test configuration and material roughness. The magnitude of the kinetic friction coefficient was also affected by varying normal pressure, surface roughness and ice hardness. Additional guidelines for standardized ice friction tests and future investigations are recommended.

39-3958
Measuring thermal performance of building envelopes: nine case studies.
Flanders, S.N., *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1985, CR 85-07, 36p., ADA-155 083, 13 refs.
Thermal insulation, Buildings, Heat flux, Thermal measurements, Thermocouples, Computer applications, Cost analysis, Wind factors.
Nine buildings at Ft. Devens were the object of a study employing heat flux sensors, thermocouples, a computer-controlled data acquisition system and infrared thermography. The purpose was to measure the R-values of those buildings to determine their economic potential for improved insulation. The sample included four frame buildings, two masonry buildings, and three frame buildings with brick facing. The technique for measuring R-values proved repeatable and accurate within 15%. Sampling a small representative sample sufficiently characterizes the entire stock of buildings. Measurement is more important for poorly insulated buildings, since the beginning R-value has a drastic impact on the budget for a cost-effective reinsulation project. At Ft. Devens, installing an external Styrofoam insulation system on concrete block barracks has a savings-to-investment ratio of about 1.4.

39-3959
Ice fog as an electro-optical obscurant.
Koh, G., *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1985, CR 85-08, 11p., ADA-155 059, 22 refs.
Ice fog, Infrared radiation, Light (visible radiation), Radiation absorption, Scattering, Electromagnetic properties, Ice crystal optics, Analysis (mathematics).
The extinction of visible light and infrared radiation (at wavelengths of 3.5 and 10.6 micron) by ice fog is considered utilizing theoretical concepts and historical experimental data. The reliability of the spherical approximation of ice fog for Mie calculations is examined and judged adequate for forward scatter situations but limited for side and backscatter applications. The relative efficacy in penetrating ice fog as a function of size distribution is evaluated for the wavelengths considered.

39-3960
Numerical methods in thermal problems.
International Conference on Numerical Methods in Thermal Problems, 3rd, Seattle, WA, Aug. 2-5, 1983, Swansea, U.K., Pineridge Press, 1983, 1215p., Refs. passim. For selected papers see 39-3961 through 39-3968.
Lewis, R.W., ed, Johnson, J.A., ed, Smith, W.R., ed.
Heat transfer, Mass transfer, Thermal conductivity, Porous materials, Enthalpy, Turbulent flow, Freezing, Thermal insulation, Temperature effects, Phase transformations, Analysis (mathematics), Meetings.

39-3961
Thermal characteristics of a one layer spherical particles insulator.
Khader, M.S., International Conference on Numerical Methods in Thermal Problems, 3rd, Seattle, WA, Aug. 2-5, 1983. Proceedings. Edited by R.W. Lewis, J.A. Johnson and W.R. Smith, Swansea, U.K., Pineridge Press, 1983, p.65-75, 2 refs.
Thermal insulation, Heat transfer, Thermal conductivity, Spheres, Particles, Time factor.

39-3962
Use of the enthalpy method in the solution of Stefan problems.
Voller, V.R., et al, International Conference on Numerical Methods in Thermal Problems, 3rd, Seattle, WA, Aug. 2-5, 1983. Proceedings. Edited by R.W. Lewis, J.A. Johnson and W.R. Smith, Swansea, U.K., Pineridge Press, 1983, p.91-101, 23 refs.
Cross, M.
Enthalpy, Boundary layer, Stefan problem, Temperature distribution, Analysis (mathematics), Time factor.

39-3963
2-d transient freezing in a pipe with turbulent flow, using a continually deforming mesh with finite elements.
Albert, M.R., et al, MP 1893, International Conference on Numerical Methods in Thermal Problems, 3rd, Seattle, WA, Aug. 2-5, 1983. Proceedings. Edited by R.W. Lewis, J.A. Johnson and W.R. Smith, Swansea, U.K., Pineridge Press, 1983, p.102-112, 10 refs.
O'Neill, K.
Pipeline freezing, Turbulent flow, Heat flux, Heat transfer, Analysis (mathematics), Flow rate.

39-3964
Variable interchange technique for the solution of a solidification problem.
Bell, G.E., International Conference on Numerical Methods in Thermal Problems, 3rd, Seattle, WA, Aug. 2-5, 1983. Proceedings. Edited by R.W. Lewis, J.A. Johnson and W.R. Smith, Swansea, U.K., Pineridge Press, 1983, p.124-133, 6 refs.
Heat transfer, Solid phases, Boundary layer, Liquid solid interfaces, Surface temperature, Analysis (mathematics), Phase transformations, Enthalpy.

39-3965
Solution of 2-d axisymmetric phase change problems on a fixed mesh, with zero width phase change zone.
O'Neill, K., MP 1894, International Conference on Numerical Methods in Thermal Problems, 3rd, Seattle, WA, Aug. 2-5, 1983. Proceedings. Edited by R.W. Lewis, J.A. Johnson and W.R. Smith, Swansea, U.K., Pineridge Press, 1983, p.134-146, 21 refs.
Thermal conductivity, Enthalpy, Artificial freezing, Heat capacity, Phase transformations, Soil freezing, Boundary layer, Analysis (mathematics).
A new method is presented for solving two-dimensional axisymmetric heat conduction problems with phase change. A strict discontinuity between phases is assumed, and no artificially smoothed enthalpy transition between phases need be introduced. Step changes across phase boundaries in the sensible heat capacity and thermal conductivity are accommodated, when the phase change isotherm cuts arbitrarily across a fixed mesh of linear triangular finite elements. Latent heat effects are accounted for through a Dirac delta function in the heat capacity. This is absorbed mathematically and its effects distributed appropriately over discrete mesh entities in the course of ordinary Galerkin finite element procedures. Computed results agree well with analytical solutions in the limited cases where they are available, and numerical results in more general cases behave quite reasonably.

39-3966
Finite element method for coupled heat and water movement in a partially frozen soil.
Hornung, U., International Conference on Numerical Methods in Thermal Problems, 3rd, Seattle, WA, Aug. 2-5, 1983. Proceedings. Edited by R.W. Lewis, J.A. Johnson and W.R. Smith, Swansea, U.K., Pineridge Press, 1983, p.162-170, 8 refs.
Frozen ground, Water flow, Heat transfer, Soil water, Phase transformations, Enthalpy, Freezing, Convection, Analysis (mathematics).

39-3967
Finite element modelling of heat and mass transfer in porous media.
Reffstrup, J., et al, International Conference on Numerical Methods in Thermal Problems, 3rd, Seattle, WA, Aug. 2-5, 1983. Proceedings. Edited by R.W. Lewis, J.A. Johnson and W.R. Smith, Swansea, U.K., Pineridge Press, 1983, p.173-183, 11 refs.
Houbak, N.
Heat transfer, Mass transfer, Porous materials, Thermal conductivity, Mathematical models, Temperature distribution.

39-3968
Heat transfer and boundary-layer laws in strongly non-adiabatic turbulent flows.
Nitsche, W., et al, International Conference on Numerical Methods in Thermal Problems, 3rd, Seattle, WA, Aug. 2-5, 1983. Proceedings. Edited by R.W. Lewis, J.A. Johnson and W.R. Smith, Swansea, U.K., Pineridge Press, 1983, p.707-717, 8 refs.
Thunker, R., Haberland, C.
Heat transfer, Boundary layer, Turbulent flow, Temperature effects, Velocity.

39-3969
Environmental influences on engineering structures of the Berlin freeway. (Untersuchung von Umwelteinflüssen auf Ingenieurbauwerke der Berliner Stadtautobahn).
Weber, D., *Germany, Bundesanstalt für Materialprüfung. Amts- und Mitteilungsblatt*, 1982, 12(2), p.107-113, In German
Salting, Concrete pavements, Concrete strength, Concrete aggregates, Damage, Environmental impact.

39-3970
Method and composition for improving safety of aircraft runways.
Moore, W.P., et al, *Canada Patent Office Patent*, Jan. 13, 1976, 18p. CANP-981440
Ogden, R.E., Novotny, J.
Runways, Chemical ice prevention, Ice removal, Snow removal, Airports, Safety, Chemical composition, Ice melting, Snow melting, Urea.

39-3971
Anti-icer and de-icer compositions.
Baiker, J.C., et al, *Canada. Patent Office. Patent,* June 17, 1975, 14p. CANP-969345.
Livengood, S.M.
Chemical ice prevention, Ice control, Ice removal, Snow removal, Runways, Road icing, Airports, Countermeasrues, Urea.

39-3972
Deicing composition. [Antiobledenitel'nyĭ sostav]
Mitkevich, E.M., et al, *Russia. Komitet po delam izobretenĭ i otkrytiĭ. Patent,* June 7, 1982, 4 col., SOVP-1384557/23-05, In Russian.
Vlasenko, V.A.
Chemical ice prevention, Road icing, Aircraft icing, Ship icing, Runways, Chemical composition, Countermeasures.

39-3973
Method of production of pourable salt. [Verfahren zur Herstellung rieselfaehiger Streusalze]
Boltze, R., et al, *Deutsche Demokratische Republik. Amt für Erfindungs- und Patentwesen. Patentschrift,* Feb. 2, 1982, 7p., GDRP-202 859, In German.
Heynert, J., Mundo, A., Kitzing, G.
Salting, Manufacturing, Road icing, Ice removal, Snow removal.

39-3974
Method to inhibit corrosive effect of MgCl2 solutions. [Verfahren zur Inhibierung von MgCl2-Lösungen]
Kloth, H., et al, *Deutsche Demokratische Republik. Amt für Erfindungs- und Patentwesen. Patentschrift,* Feb. 6, 1980, 3p., GDRP-140 030, In German.
Kaiser, P., Blum, H.-P.
Salting, Corrosion, Chemical composition, Road icing, Chemical ice prevention, Ice removal, Snow removal.

39-3975
De-icing composition.
Fisons Limited, *United Kingdom. Patent Office. Patent,* Mar. 7, 1970, 3p. UKP-1 308 780.
Chemical ice prevention, Chemical composition, Road icing, Corrosion, Countermeasures.

39-3976
Product for the protection of concrete pavements from degradation due to salting, and its mode of application. [Produit de protection de revêtements bétonnés contre les dégradations dues à l'emploi de sels de déverglaçage et son mode d'application]
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Cements, Concrete durability, Salting, Concrete pavements, Penetration, Diffusion, Road icing, Chemical ice prevention, Concrete admixtures.

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Deicing composition. [Protivogololednyĭ sostav]
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Ice adhesion, Chemical ice prevention, Road icing, Ice solid interface, Bituminous concretes, Metals.

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Rippie, W., *European Patent Office. Patent,* Aug. 29, 1983, 9p. EP 0 114 927 A2.
Chemical ice prevention, Road icing, Ice removal, Snow removal, Salting, Degradation, Damage, Bridges, Vegetation, Environmental impact.

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Ice removal, Skid resistance, Snow removal, Road icing, Chemical ice prevention, Concrete pavements, Cements.

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39-3985
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Foundations, Permafrost physics, Industrial buildings, Electrical grounding, Active layer, Electric equipment, Contrete structures, Permafrost beneath structures, Winter maintenance, Reinforced concretes, Power line supports, Power line icing, Ice loads, Snow loads, Wind factors.

39-3987
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Electric power, Permafrost beneath structures, Electrical grounding, Power line supports, Power line icing, Permafrost structure, Ground ice, Snow loads, Ice loads, Wind factors, Swamps.

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Electric power, Electric equipment, Electric heating, Permafrost beneath structures, Wind factors.

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Li, L.D.
Electric power, Electric equipment, Winter maintenance, Cold weather operation, Safety, Permafrost beneath structures.

39-3990
Controlling seasonal variations in grounding resistance of electrode grounding systems (a system of grounding electrodes as a grounding device with heating). [Upravlenie sezonnymi variatsiiami soprotivleniia zazemleniia iz zazemliteleĭ-elektrodov (Sistema zazemliteleĭ-elektrodov kak zazemliaiushchee ustroĭstvo s podogrevom)]
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39-3991
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Industrial buildings, Foundations, Electrical grounding, Permafrost beneath structures, Active layer, Concrete structures, Reinforced concretes.

39-3992
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Gas pipelines, All terrain vehicles, Transportation, Swamps, Permafrost.

39-3994
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Timin, V.N., et al, *Stroitel'stvo truboprovodov,* June 1985, No.6, p.28-29, In Russian.
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Transportation, Pipe laying, Hoists, Pipelines.

39-3995
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Gas pipelines, Swamps, Floodplains, Permafrost distribution, Permafrost depth, Active layer, Cold weather construction, Transportation, Roads.

39-3996
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Bessarab, V.V., et al, *Stroitel'stvo truboprovodov*, June 1985, No.6, p.40, In Russian.
Molokova, V.IA., Taratunina, N.K.
Swamps, Ground thawing, Earth fills, Dredging, Dams, Embankments, Roads.

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Orlov, V., *Nauka i zhizn'*, June 1985, No.6, p.128-129, In Russian.
Houses, Foundations, Deformation, Frost heave, Countermeasures.

39-3998
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Sea ice, Models, Albedo, Ice cover thickness, Snow melting.

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Sea ice, Ice cover thickness, Ice growth, Mathematical models, Radiation, Snowfall.
A thermodynamic sea ice model numerically structured to take time steps on the order of a week is found to be sensitive to time step size when new ice formed on open ocean is assumed to cover the ice-free area. This sensitivity is caused by the extrapolation of initial ice growth rates on open ocean, which can be very high, over the length of the time step. The sensitivity to time step size is tremendously reduced when the parameterization for the formation of new ice is altered so that the new ice thickness is specified. However, the sensitivity continues during the winter, when the area of open ocean is small because the volume of ice formed over the time step is more than enough to fill the open area at the specified thickness. Therefore ice thickness during the winter is again determined by time step size. Suggestions are made on how the sea ice model's sensitivity to time step size can be further reduced without sacrificing computational efficiency. The model extends into the Southern Hemisphere as far as 77.5S. (Auth.)

39-4000
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Schmoll, H.R., et al, Anchorage, Alaska, Geological Society, 1984, 89p., Refs. p.82-89.
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Glacial geology, Glacial deposits, Stratigraphy, Moraines, Pleistocene, Geology, United States—Alaska—Cook Inlet.

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Poplin, J.P.
Ice strength, Compressive properties, Ice crystal structure, Ice density, Ice salinity, Sea ice, Grain size, Strains, Tests.

39-4002
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Natural resources, Permafrost distribution, Electric power, River ice, Lake ice, Active layer, Peat, Ground thawing, Biomass, Hydrates, United States—Alaska.

39-4003
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New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Christchurch, 1985, 80p.
Manuals, Logistics, Radio communication, Safety, Antarctica.
The manual is composed of four sections: field travel and safety; field planning and logistics; field communications; and place names in the New Zealand and Australian antarctic territory. Details and guides are expounded for conducting safe and successful research trips amid a harsh and hostile environment.

39-4004
Antarctic operations manual.
New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Christchurch, 1985, 80p.
Safety, Logistics, Manuals, Environmental impact, Antarctica.
The manual provides guidance to New Zealand personnel as to their duties, responsibilities, and conduct while participating in the antarctic research program. It covers a wide range of activities, from engaging in scientific research to buying postage stamps. Considerable emphasis is placed on matters of individual and group safety from the point of departure, en route to Antarctica, and while living in Antarctica.

39-4005
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39-4009
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Ice sheets, Ice deformation, Strains, Temperature distribution, Ice temperature, Antarctica—Wilkes Land.
Temperature distribution with depth at the Dome C ice divide is calculated for a number of vertical strain rate functions, assuming two-dimensional flow. To solve the heat equation, the Dome C oxygen isotope profile and radar data are used to specify the surface and basal boundary conditions, respectively. Two different sets of simple, monotonic polynomials are used as strain rate test functions. Using dated horizons in the oxygen isotope profile obtained by cross correlation with a marine sediment core, virtually no change is found in accumulation rate at Dome C since the end of the Wisconsinan glacial. (Auth. mod.)

39-4010
Spreading agent for removing or preventing slippery surface on snow and/or ice. [Streumittel zur Beseitigung oder Verhinderung von Schnee- und/oder Eisglätte],
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Ice prevention, Ice removal, Snow removal, Skid resistance, Road icing, Grain size.

39-4011
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Ice prevention, Skid resistance, Road icing, Ice removal, Snow removal, Grain size.

39-4012
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Construction materials, Ice prevention, Concrete admixtures, Mud, Roads.

39-4013
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Helm, U.
Road icing, Skid resistance, Ice removal, Snow removal, Chemical ice prevention.

39-4014
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Chemical ice prevention, Road icing, Snow removal, Ice removal, Skid resistance.

39-4015
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Friedrich, G., *Germany. Federal Republic. Deutsches Patentamt. Offenlegungsschrift*, July 23, 1981, 4p., DE 3001930 A1, In German.
Chemical ice prevention, Skid resistance, Ice removal, Snow removal, Road icing.

39-4016
Method and device for measuring the amount of soluble substances, such as salt on pavements. [Verfahren und Einrichtung zur Mengenmessung löslicher Substanzen wie Auftausalzen auf einer Fahrbahnoberfläche],
Budan, G., *Germany. Federal Republic. Deutsches Patentamt. Offenlegungsschrift*, Dec. 30, 1982, 10p., DE 3120362 A1, In German.
Salting, Pavements, Ice control, Ice removal, Snow removal, Measuring instruments.

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Salting, Chemical ice prevention, Manufacturing, Road icing, Snow removal, Ice removal, Environmental protection.

39-4018
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Road icing, Chemical ice prevention, Solutions.

39-4019
Spreading agent for icy and snowy roads. [Streumittel für vereiste und schneeglatte Strassen],
Fresenius, W., *Germany. Federal Republic. Deutsches Patentamt. Offenlegungsschrift*, Sep. 7, 1972, 4p., DT 2107558, In German.
Road icing, Chemical ice prevention, Ice removal, Snow removal.

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Heat transfer, Thermal conductivity, Boundary layer, Convection, Analysis (mathematics).

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Sekulić, D.P., *International journal of heat and mass transfer*, June 1985, 28(6), p.1205-1214, With French, German and Russian summaries. 23 refs.
Cryogenics, Condensation, Phase transformations, Surface temperature, Boundary layer, Thermodynamics.

39-4022
Analytical solution for the buoyancy flow during the melting of a vertical semi-infinite region.
Huang, S.C., *International journal of heat and mass transfer*, June 1985, 28(6), p.1231-1233, 5 refs.
Flow rate, Melting, Buoyancy, Heat transfer, Stefan problem, Thermal conductivity, Convection, Surface temperature, Phase transformations, Analysis (mathematics).

39-4023
Seasonal pack ice characteristics in the shear zone of the Beaufort Sea based on data from an upward looking sonic profiler (1978-1979).
Hoare, R.D., et al, *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Jan. 1980, No.147, 45p. + appends.
Davielewicz, B.W., Pilkington, G.R., O'Rourke, J.C.
Ice bottom surface, Ice cover thickness, Sea ice distribution, Remote sensing, Acoustic measurement, Profiles, Seasonal variations, Beaufort Sea.

39-4024
Snow loads on sloping roofs: two pilot studies in the Ottawa area.
Taylor, D.A., *Canadian journal of civil engineering,* June 1985, 12(2), p.334-343, With French summary. 16 refs.
Snow loads, Roofs, Slope orientation, Surface roughness, Sliding, Snow density, Snow depth.

39-4025
Water supply and waste disposal on permanent snowfields.
Reed, S.C., et al, *Canadian journal of civil engineering,* June 1985, 12(2), MP 1792, p.344-350, With French summary. 10 refs.
Bouzoun, J.R., Tobiasson, W.T.
Water supply, Waste disposal, Snow cover effect, Waste treatment, Water chemistry, Equipment, Ice melting.
The snow and glacial ice on permanent snowfields must serve as both the water source and the receptacle for wastes for any human habitation. In addition, the snow also serves as the support media for any structural foundations and hence the thermal aspects of water supply and waste disposal can be critical. Most activity has occurred on the ice caps of Greenland and Antarctica and has ranged from small transient field parties to large permanent facilities in continuous use for over 25 years. Novel procedures to insure the reliable production of good quality water are described as well as the recommended criteria for water quantity depending on the size and duration of the activity. The various methods of wastewater disposal that have been used at temporary camps and permanent stations are described along with the results from studies that defined the fate of the wastewater following its discharge to the snow. Such definition is important to insure protection of the water supply as well as the thermal integrity of any structural foundation.

39-4026
Cold-mix asphalt technology temperatures below 10 C.
Jarrett, P.M., et al, *Association of Asphalt Paving Technologists. Technical sessions, Scottsdale, Arizona, Apr. 9-11, 1984. Proceedings,* 1984, Vol.53, 3 refs.
Beaty, A.N.S., Wojcik, A.S.
Bitumens, Pavements, Concrete curing, Aggregates, Stability, Freezing points, Density (mass/volume), Temperature effects.

39-4027
Guide to Late Pleistocene and Holocene deposits of Turnagain Arm.
Bartsch-Winkler, S., et al, Anchorage, Alaska Geological Society, 1984, 70p. + 2 maps, Refs. p.65-70.
Schmoll, H.L.
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Moraines, Quaternary deposits, Sedimentation, Geology, Pipelines, Paleoclimatology, Pleistocene, Manuals, Stratigraphy, Glaciation, Railroads, United States—Alaska—Turnagain Arm.

39-4028
Geologic guide to the Fairbanks-Livengood area, east-central Alaska.
Weber, F.R., et al, Anchorage, Alaska Geological Society, 1985, 44p., Refs. p.41-44.
Smith, T.E., Hall, M.H., Forbes, R.B.
Geology, Permafrost distribution, Natural resources, Manuals, Sedimentation, Paleoclimatology, Quaternary deposits, Volcanoes, United States—Alaska—Fairbanks.

39-4029
Ross Ice Shelf geophysical and glaciological survey (RIGGS): introduction and summary of measurements performed.
Bentley, C.R., *American Geophysical Union. Antarctic research series,* 1984, 42(1), p.1-20, Refs. p.19-20.
Geophysical surveys, Glaciology, Ice surveys, Ice shelves, Antarctica—Ross Ice Shelf.
An airlifted survey covering the entire ice shelf, the Ross Ice Shelf Geophysical and Glaciological Survey (RIGGS), is reported. Measurements of many kinds were carried out at the 200 RIGGS stations over the 5-year period 1973-1978. Quantities determined included accumulation rate, strain rate, ice thickness, subglacial water depth, and gravity at 75-95% of the sites; temperatures and movement rate at 40-50% of the sites; seismic and radio wave velocities and electrical resistivities at 10-20 sites, and radar polarization at six sites. More extensive programs, including core drilling to 50-100 m, tidal gravity recording, and long seismic refraction profiles to investigate submarine geologic structure, were carried out at 10 primary and supplementary base camps. In addition, 13,500 km of airborne radar sounding were completed. Detailed seasonal tabulations of the types and locations of measurements are presented in this paper, along with a brief season-by-season narrative. (Auth.)

39-4030
Glaciological studies on the Ross Ice Shelf, Antarctica, 1973-1978.
Thomas, R.H., et al, *American Geophysical Union. Antarctic research series,* 1984, 42(2), p.21-53, Refs. p.52-53.
MacAyeal, D.R., Eilers, D.H., Gaylord, D.R.
Geophysical surveys, Glaciology, Ice surveys, Ice shelves, Ice temperature, Ice creep, Antarctica—Ross Ice Shelf.
The Ross Ice Shelf Geophysical and Glaciological Survey (RIGGS) yielded measurements of ice velocities, strain rates, accumulation rates, and 10-m temperatures, which are presented in this paper. Near the grounding line between the ice shelf and the West Antarctic ice sheet, ice velocity ranges from a few meters per year to several hundred meters per year in ice streams. Ice velocity increases as the ice moves seaward, reaching more than 1 km/yr in the central portions of the ice front. Ice velocity at Little America V is double earlier estimates. Measurement of strain rates is described in detail, and the significance of the various components of the strain rate and rotation rate tensors is discussed. In a large part of the ice shelf near the West Antarctic ice sheet, 10-m temperatures are about 1 C higher than values that were obtained during the International Geophysical Year (1957-1958). (Auth. mod.)

39-4031
Studies of the behavior of a snow cover on mountain slope. 15. Curves C(H) traversing the snow cover with their ends on its surface and the ground.
Yoshida, Z., *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.1-14, 3 refs., In Japanese with English summary.
Snow cover stability, Snow cover distribution, Slope orientation, Stresses, Snow mechanics, Surface properties, Mountains.

39-4032
Studies of the behavior of a snow cover on mountain slope. 16. Curves C(H) in the neighbourhood of a point of horizontal PSP.
Yoshida, Z., *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.15-31, 5 refs., In Japanese with English summary.
Snow cover distribution, Snow cover stability, Surface properties, Slope orientation, Snow mechanics, Stresses, Mountains.

39-4033
Studies of the behavior of a snow cover on mountain slope. 17. Localization of the stresses in the snow cover.
Yoshida, Z., *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.33-47, 8 refs., In Japanese with English summary.
Snow cover distribution, Snow cover stability, Surface properties, Slope orientation, Stresses, Avalanche formation, Mountains, Snow mechanics.

39-4034
Studies of the behavior of a snow cover on mountain slope. 18. Glide motion of snow and formation of crack in melting season.
Akitaya, E., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.49-57, 7 refs., In Japanese with English summary.
Endo, Y.
Snow slides, Snow mechanics, Slope orientation, Avalanche formation, Strains, Snow melting, Snow cover stability, Mountains, Snow depth, Cracks.

39-4035
Studies of the behavior of a snow cover on mountain slope. 19. Poisson's ratio of snow, 3.
Ohizumi, M., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.59-67, 9 refs., In Japanese with English summary.
Huzioka, T.
Snow cover stability, Snow compression, Slope orientation, Stresses, Viscosity, Mountains.

39-4036
Temperature fluctuation in stable stratification above snow cover.
Ishikawa, N., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.69-78, 16 refs., In Japanese with English summary.
Motoyama, H., Kojima, K.
Air temperature, Snow cover effect, Temperature variations, Diurnal variations, Temperature gradients, Wind velocity.

39-4037
An equation of profile of snow drift density during snowfall.
Kobayashi, S., *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.79-83, 7 refs., In Japanese with English summary.
Snowdrifts, Snow density, Snowfall, Analysis (mathematics), Snowstorms.

39-4038
Measuring methods of atmospheric electric elements at the earth's surface during snowfall and investigation of these relationships.
Endoh, T., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.85-100, 20 refs., In Japanese with English summary.
Taniguchi, T.
Atmospheric electricity, Atmospheric physics, Snowfall, Electric field, Ions, Measuring instruments.

39-4039
Case studies of snow clouds by means of snow crystal sondes.
Irikawa, S., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.101-112, 9 refs., In Japanese with English summary.
Endoh, T., Yamada, T., Wakahama, G.
Snow crystal structure, Snowfall, Supercooled clouds, Sounding, Particle size distribution, Meteorological data.

39-4040
Observation of precipitating clouds by a vertically pointing radar at Morino in the Iburi district, Hokkaido, Japan.
Fujiyoshi, Y., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.113-123, 13 refs., In Japanese with English summary.
Endoh, T., Yamada, T.
Precipitation (meteorology), Rain, Radar echoes, Supercooled clouds, Mountains.

39-4041
Studies on icicles (I): General aspects of the structure and growth of an icicle.
Maeno, N., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.125-138, 11 refs., In Japanese with English summary.
Takahashi, T.
Ice formation, Ice structure, Ice growth, Dendritic ice.

39-4042
Studies on icicles (II): Wave-forms, spikes and bent icicles.
Maeno, N., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.139-147, 4 refs., In Japanese with English summary.
Takahashi, T.
Ice growth, Ice formation, Ice structure, Heat transfer, Supercooling, Water temperature, Meltwater, Wind factors.

39-4043
Experimental study of brine upward migration in sea ice.
Kasai, T., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.149-155, 3 refs., In Japanese with English summary.
Ono, N.
Brines, Sea ice, Migration, Ice salinity, Ice cover thickness, Loads (forces), Surface properties, Air temperature, Permeability.

39-4044
Characteristics of snow cover on sea ice and formation of snow ice II.
Takizawa, T., *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.157-161, 3 refs., In Japanese with English summary.
Snow ice interface, Snow cover, Sea ice, Ice formation, Snow composition, Ice salinity, Wet snow.

39-4045
Characteristics of fast sea ice collected near Barrow, Alaska.
Kawamura, T., *Low temperature science (Teion kagaku). Series A Physical sciences,* 1984, No.43, p.163-170, 5 refs., In Japanese with English summary.
Sea ice, Fast ice, Ice crystal structure, Microstructure, Grain size, Ice salinity, Brines.

39-4046
Frost shattering of the carvings in Temiya Cave, Otaru.
Fukuda, M., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1984, No.43, p.171-180, 8 refs., In Japanese with English summary.
Frost shattering, Caves, Freeze thaw cycles, Rock properties, Excavation, Countermeasures.

39-4047
Time lag of meltwater percolation through a snow cover.
Kojima, K., et al, *Low temperature science (Teion kagaku). Series A Physical sciences*, 1984, No.43, p.181-184, In Japanese. 3 refs.
Motoyama, H.
Meltwater, Seepage, Snow cover, Permeability, Water transport.

39-4048
Changing process of the adfreezing force to a pipe within the freezing ground during the winter.
Fukuda, M., et al, *Low temperature science (Teion kagaku). Series A Physical sciences*, 1984, No.43, p.185-187, In Japanese. 2 refs.
Kinoshita, S.
Soil freezing, Pipeline freezing, Frost heave, Seasonal freeze thaw, Adhesion, Frost penetration, Active layer.

39-4049
Wind-induced fatigue damage estimated for surface oil pipelines in the Arctic.
Honegger, D.G., et al, *Oil and gas journal*, July 8, 1985, 83(27), p.49-53, 11 refs. Based on paper prepared for 4th International Symposium of Offshore Mechanics and Arctic Engineering, Dallas, TX, Feb. 17-22, 1985.
Nyman, D.J., Nyman, K.J.
Suspended pipelines, Vibration, Fatigue (materials), Hot oil lines, Damage Wind factors, Cold weather performance.

39-4050
Effects of deicing salt on physical, chemical and biological soil parameters. [Auswirkungen der Auftausalze auf physikalische, chemische und biologische Bodenparameter],
Brod, H.G., *Zeitschrift für Kulturtechnik und Flurbereinigung*, 1984, No.25, p.236-242, In German with English summary. 34 refs.
Salting, Chemical ice prevention, Soil microbiology, Soil structure, Soil chemistry, Soil water.

39-4051
Droplet size distribution effects on aircraft ice accretion.
Hansman, R.J., Jr., *Journal of aircraft*, June 1985, 22(6), p.503-508, 17 refs.
Ice accretion, Aircraft icing, Cloud droplets, Hydrodynamics, Wind tunnels, Particle size distribution, Supercooled clouds, Velocity.

39-4052
Runoff from glacierized mountains: a model for annual variation and its forecasting.
Ferguson, R.I., Water resources research, May 1985, 21(5), p.702-708, 17 refs.
Runoff forecasting, Snowmelt, Remote sensing, Glacial hydrology, Meltwater, Mountains, Mathematical models, Snow accumulation, Seasonal variations.

39-4053
Hydraulic potential in unfrozen soil in response to diurnal freezing and thawing of the soil surface.
Pikul, J.L., Jr., et al, *American Society of Agricultural Engineers. Transactions*, Jan.-Feb. 1985, 28(1), p.164-168, 21 refs.
Allmaras, R.R.
Soil water migration, Soil freezing, Ground thawing, Freeze thaw cycles, Heat transfer, Diurnal variations, Frost penetration, Soil temperature.

39-4054
Catalog of Corps of Engineers structure inventories suitable for the acid precipitation-structure material study.
Merry, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1985, SR 85-01, 40p., ADA-154 364, 4 refs.
McKim, H.L., Humiston, N.H.
Precipitation (meteorology), Chemical properties, Construction materials, Environmental protection, Damage, Buildings, Cost analysis, Computer applications.
This report contains a survey of Corps of Engineers floodplain inventories. Its purpose was to determine if enough building materials information was available in the Corps data base to be used for predicting the distribution of building materials across the country as part of the EPA acid rain assessment program. The floodplain surveys were rated using the criteria of the date of the survey, the number of buildings, the variety of building materials, the amount of dimensions data listed for the buildings, the land cover types in the data, and whether or not the data were computerized. Six structure inventories are recommended for further study.

39-4055
User's guide for the BIBSORT program for the IBM-PC personal computer.
Kyriakakis, T., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1985, SR 85-04, 61p. ADA-157 936.
Iskandar, I.K.
Data processing, Bibliographies, Manuals, Computer programs, Computer applications.
This report is intended to provide the reader with step-by-step instructions on how to use the BIBSORT computer program on the IBM Personal Computer. The program allows storage and retrieval of bibliographic data. The program has been tested on an IBM-XT, using DOS 1.1 or 2.1. The program requires a monitor and a printer. This user's guide discusses how to prepare diskettes to enter the data, how to name categories and files, how to open categories and files, and how to enter data. The guide also shows how to sort and store data, edit, delete, or append the data, and how to obtain a hard copy fo the sorted data. Each data diskette can take up to 500 entries, assuming 512 characters per entry. A section on how to change the program to fit specific needs is presented in Appendix A, and the program listing is in Appendix B.

39-4056
Macquarie Island: a wind-molded natural landscape in the Subantarctic.
Löffler, E., *Polar geography and geology*, Oct.-Dec. 1984, 8(4), p.267-286, For German original see 38-1520 or 141-29105. 36 refs.
Wind factors, Temperature effects, Vegetation patterns, Periglacial processes, Terraces, Macquarie Island.
The two dominant environmental factors on Macquarie Island are the constantly low temperatures and the high wind velocities. The low temperatures represent the overall limiting factor for the vegetation as a whole, while exposure to wind determines the distribution of the vegetation types and of small-scale geomorphological features. A hard cushion formation (feldmark) occupies most of the exposed plateau area. With decreasing exposure the hard cushions are replaced by herbfields, bogs or ferns, depending on the height of the water table. The coastal areas, which are generally less exposed, are covered by a *Poa foliosa* grassland. While the macro-relief of the island is largely glacial in origin, the micro-relief of the slopes is the product of past and recent periglacial solifluction and its interrelationship with vegetation development. While exposed slopes exhibit a high degree of slope mobility, lee slopes are much more stable and are characterized by large, stable terraces. The latter are considered to be relict features formed when permafrost conditions prevailed. (Auth. mod.)

39-4057
Glaciation of the continental shelves (Part II).
Grosval'd, M.G., *Polar geography and geology*, Oct.-Dec. 1984, 8(4), p.287-351, Translation of Oledenenie kontinental'nykh shel'fov., Itogi Nauki i tekhniki. Seriia Paleogeografiia. Moscow, VINITI, 1983, p.72-163. Refs. p.342-351. For Pt. 1 see 39-3884 or F-32086.
Glaciation, Ice sheets.
In this second part of his study of the glaciation of the continental shelves during the Würm glaciation the author first examines in detail the evidence for glacio-isostatic depression (and subsequent rebound) of the various glaciated shelves and demonstrates how this evidence substantiates the geomorphological evidence of former glaciation. This leads to a detailed discussion of "marine" ice sheets in terms of their formation, morphology and dynamics. Using the West Antarctic Ice Sheet as his model, as being the only existing example, the author demonstrates how such ice sheets consist of several interlocking components, namely ice sheets whose bases lie well below sea level on isostatically depressed shelf areas, contiguous glacier complexes on islands and mountainous coasts, and ice shelves in both interior and fringing configurations. (Auth. mod.)

39-4058
Small-capacity boarding schools for the north (construction of the Yakut ASSR schools taken as an example). [Uchebno-vospitatel'nye zdaniia malo vmestimosti dlia Severa (na primere stroitel'stva v IAkutskoi ASSR)],
Kiselev, V.M., Leningrad, Stroiizdat, 1985, 132p., In Russian. 67 refs.
Tundra, Foundations, School buildings, Polar regions, Residential buildings, Permafrost beneath structures, Hospitals, Playgrounds.

39-4059
Methods of studying frozen rocks and ice. [Metody izucheniia merzlykh porod i l'dov],
Savel'ev, B.A., Moscow, Nedra, 1985, 222p., In Russian with English summary. 12 refs.
Ice physics, Permafrost structure, Permafrost thermal properties, Ice structure, Ice chemistry, Ice thermal properties, Ice mechanics, Permafrost physics, Density, Chemical composition, Porosity, Specific surface.

39-4060
Engineering provisions for military action under special conditions. [Inzhenernoe obespechenie boia v osobykh usloviiakh],
Shamshurov, V.K., Moscow, Voenizdat, 1985, 239p., In Russian with abridged English table of contents enclosed.
Military engineering, Military equipment, Military facilities, Military operation, Military transportation, River crossings, Polar regions, Logistics, Trenching, Earthwork, Fortifications.

39-4061
Transient flow process in unsaturated soils under flux boundary conditions.
Fredlund, D., et al, International Conference on Numerical Methods in Geomechanics, 4th, Edmonton, Canada, May 31-June 4, 1982. Proceedings. Edited by Z. Eisenstein, Rotterdam, A.A. Balkema, 1982, p.307-317, 17 refs.
Dakshanamurthy, V.
Soil mechanics, Soil water migration, Heat transfer, Boundary layer, Thermal conductivity, Climatic factors, Saturation, Soil structure, Water pressure, Mathematical models, Engineering.

39-4062
Transient creep of frozen soil beams.
Klein, J., International Conference on Numerical Methods in Geomechanics, 4th, Edmonton, Canada, May 31-June 4, 1982. Proceedings. Edited by Z. Eisenstein, Rotterdam, A.A. Balkema, 1982, p.975-981, 14 refs.
Frozen ground mechanics, Soil creep, Walls, Stresses, Loads (forces), Rheology, Viscoelasticity, Time factor, Analysis (mathematics), Deformation.

39-4063
Analysis of heat flow in artificially frozen soils.
Makowski, E., et al, International Conference on Numerical Methods in Geomechanics, 4th, Edmonton, Canada, May 31-June 4, 1982. Proceedings. Edited by Z. Eisenstein, Rotterdam, A.A. Balkema, 1982, p.1211-1220, 24 refs.
Jessberger, H.L.
Frozen ground mechanics, Heat transfer, Thermal regime, Construction, Artificial freezing, Latent heat, Soil structure, Soil creep, Pipeline freezing, Mathematical models, Soil temperature.

39-4064
Fly ash, silica fume, slag and other mineral by-products in concrete.
International Conference on the Use of Fly Ash, Silica Fume, Slag and Other Mineral By-Products in Concrete, 1st, Montebello, Canada, July 31-Aug. 5, 1983, American Concrete Institute, Publication SP-79, Detroit, MI, American Concrete Institue, 1983, 1182p. (2 vols.), Refs. passim. For selected papers see 39-4065 through 39-4068.
Malhotra, V.M., ed.
DLC TP884.A3 F59 198-
Concrete aggregates, Concrete durability, Concrete admixtures, Freeze thaw tests, Concrete freezing, Frost resistance, Air entrainment, Meetings.

39-4065
Freezing and thawing resistance of condensed silica fume (microsilica) concrete exposed to deicing chemicals.
Sorensen, E.V., International Conference on Numerical Methods in Geomechanics, 4th, Edmonton, Canada, May 31-June 4, 1982. Proceedings. Edited by Z. Eisenstein, Rotterdam, A.A. Balkema, 1982, p.709-718, 6 refs.
Concrete durability, Freeze thaw tests, Chemical ice prevention, Concrete admixtures, Damage, Air entrainment.

39-4066
Freeze-thaw resistance of concrete containing blast-furnace slag, fly ash or condensed silica fume.
Virtanen, J., International Conference on Numerical Methods in Geomechanics, 4th, Edmonton, Canada, May 31-June 4, 1982. Proceedings. Edited by Z. Eisenstein, Rotterdam, A.A. Balkema, 1982, p.923-931, 7 refs.
Concrete durability, Freeze thaw cycles, Air entrainment, Frost action, Frost resistance.

39-4067
Freezing and thawing durability of three cements with various granulated blast furnace slag contents.
Pigeon, M., et al, International Conference on Numerical Methods in Geomechanics, 4th, Edmonton, Canada, May 31-June 4, 1982. Proceedings. Edited by Z. Eisenstein, Rotterdam, A.A. Balkema, 1982, p.979-998, 14 refs.
Regourd, M.
Cement admixtures, Freeze thaw cycles, Frost resistance, Concrete durability, Porosity, Air entrainment, Microstructure, Damage, Scanning electron microscopy.

39-4068
Resistance to freezing and thawing of concrete using ground blast-furnace slag.
Murata, J., et al, International Conference on Numerical Methods in Geomechanics, 4th, Edmonton, Canada, May 31-June 4, 1982. Proceedings. Edited by Z. Eisenstein, Rotterdam, A.A. Balkema, 1982, p.999-1005, 5 refs.
Kawasaki, M., Sakai, T., Kawai, T.
Freeze thaw tests, Concrete durability, Concrete aggregates, Frost resistance, Air entrainment, Porosity.

39-4069
Main results and perspectives of some Chilean experiences developed with low cost and accurate spatial remote sensing technology.
Araya F., M., *Advances in space research,* 1984, 11(4), p.85-90, 7 refs.
Remote sensing, Spacecraft, Snow melting, Antarctica—Antarctic Peninsula.
This paper summarizes the main results and prospects of several Chilean programs developed by using low cost but accurate remote sensing techniques. Three main applications are shown: use of satellite data collection systems to measure meteorological data on the Antarctic Peninsula; study of geothermal resources in the Andes Range by using multispectral and multitemporal Landsat images; and snowmelt runoff forecasting for Andean watersheds by using Landsat data. All these applications have provided important and useful results and reliable methodologies have been developed. (Auth.)

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